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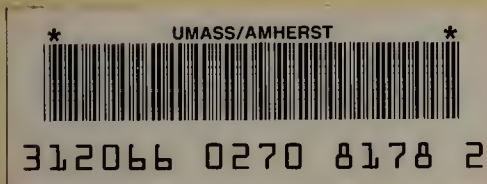
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Massachusetts Coastal Zone Management

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Offshore Oil and Gas Development

GOVERNMENT DOCUMENTS
COLLECTION

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FINAL COMMENTS ON
THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR
NORTH ATLANTIC LEASE SALE # 42





EVELYN F. MURPHY
SECRETARY

The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02202

ERRATA SHEET FOR MASSACHUSETTS' FINAL COMMENTS ON THE DRAFT ENVIRONMENTAL
IMPACT STATEMENT FOR PROPOSED NORTH ATLANTIC LEASE SALE # 42

Page 1-5 - Epilogue, 3rd paragraph

insert "major" between "first" and "Development"

"Our recommendation is that the Department of Interior prepare
a Development Phase Environmental Impact Statement - for the
lease sale area as a whole - prior to approval of the first
major Development Plan."

Page 2-31 - Map showing recommended Tract Withdrawals

tracts marked in oil spill site 8 with an L, should be marked
with a W 1.

Page 3-3 - 4th paragraph, line 5

underline "Upon consultation with the states ... "

5th paragraph, line 4

underline " ... and the states ... "

Page 3-7 - 2nd paragraph, line 2

DO NOT underline the sentence "Barges will not be used for
surface transportation except in emergency situations where
the Supervisor determines that the use of no other vessels
is feasible."

Page 3-11 - under the major heading Discussion

replace the first sentence with this one:

"This stipulation differs from the one proposed by B.L.M. in
that it leaves no choice about the disposal of drill cuttings
and mud, but rather requires shunting in prime spawning grounds."

Page 3-14 - under major heading Discussion, line 3

delete the sentence "The opportunities are great for conflict ...
electronic gear miles long" and replace it with:

"The opportunities are great for conflict between trawling
vessels which are slow moving and have limited maneuverability
and seismic vessels which must follow predetermined paths tow-
ing strings of electronic gear miles long."

Page 4-1 - last (9th) paragraph, line 3

"First", not "Risrt".

Page 4-2 - 5 paragraph, Recommendation, line 11

underline "which include a radar reflector and light"

Page 5-12 - 3rd paragraph, lines 2 and 3

delete "Third paragraph, insert the following sentence after
page 898."

Page 6-4 - Intentionally left blank

EPILOGUE

Page 1 - 4th paragraph, line 3

add "major" between "first" and "Development" - "to approve
the first major Development Plan."

line 7

add "major" between "first" and "Development" - "It should
describe the actions proposed in the first major Development
Plan."

Page 6 - line 6

"competition"

line 7

"incomplete"

FINAL COMMENTS ON
THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR
NORTH ATLANTIC LEASE SALE # 42





THE COMMONWEALTH OF MASSACHUSETTS

EXECUTIVE DEPARTMENT

STATE HOUSE • BOSTON 02133

MICHAEL S. DUKAKIS
GOVERNOR

December 23, 1976

Frank Basile, Director
New York Outer Continental Shelf Office
Bureau of Land Management
6 World Trade Center - Suite 600D
New York, New York 10048

Dear Mr. Basile:

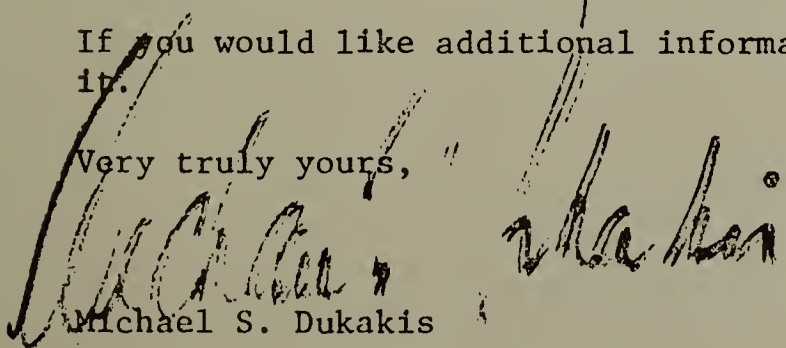
Enclosed are comments prepared by the Commonwealth of Massachusetts on the Draft Environmental Impact Statement for Proposed Lease Sale # 42.

We are forwarding them to you for incorporation into the Final Environmental Impact Statement which is scheduled to be published next spring.

I would like to draw your attention to Chapter 2, Recommendations on Tract Withdrawals, and Chapter 3, Recommendations on Lease Stipulations. Repeatedly, the Commonwealth has stated its desire to pursue the exploration and development of oil and gas resources in a manner mindful of the living, renewable resources sustained on the Bank. For the maximum protection possible, we are recommending the withdrawal of 17 nearshore tracts, in addition to the 9 withdrawals recommended last June. Also, we are recommending stiff restrictions on offshore operations, through Lease Stipulations and Operating Orders.

If you would like additional information, we would be pleased to provide it.

Very truly yours,


Michael S. Dukakis
Governor of the
Commonwealth

cc: Ronald Coleman, Director of B.L.M.
Curt Berklund, Director of B.L.M.

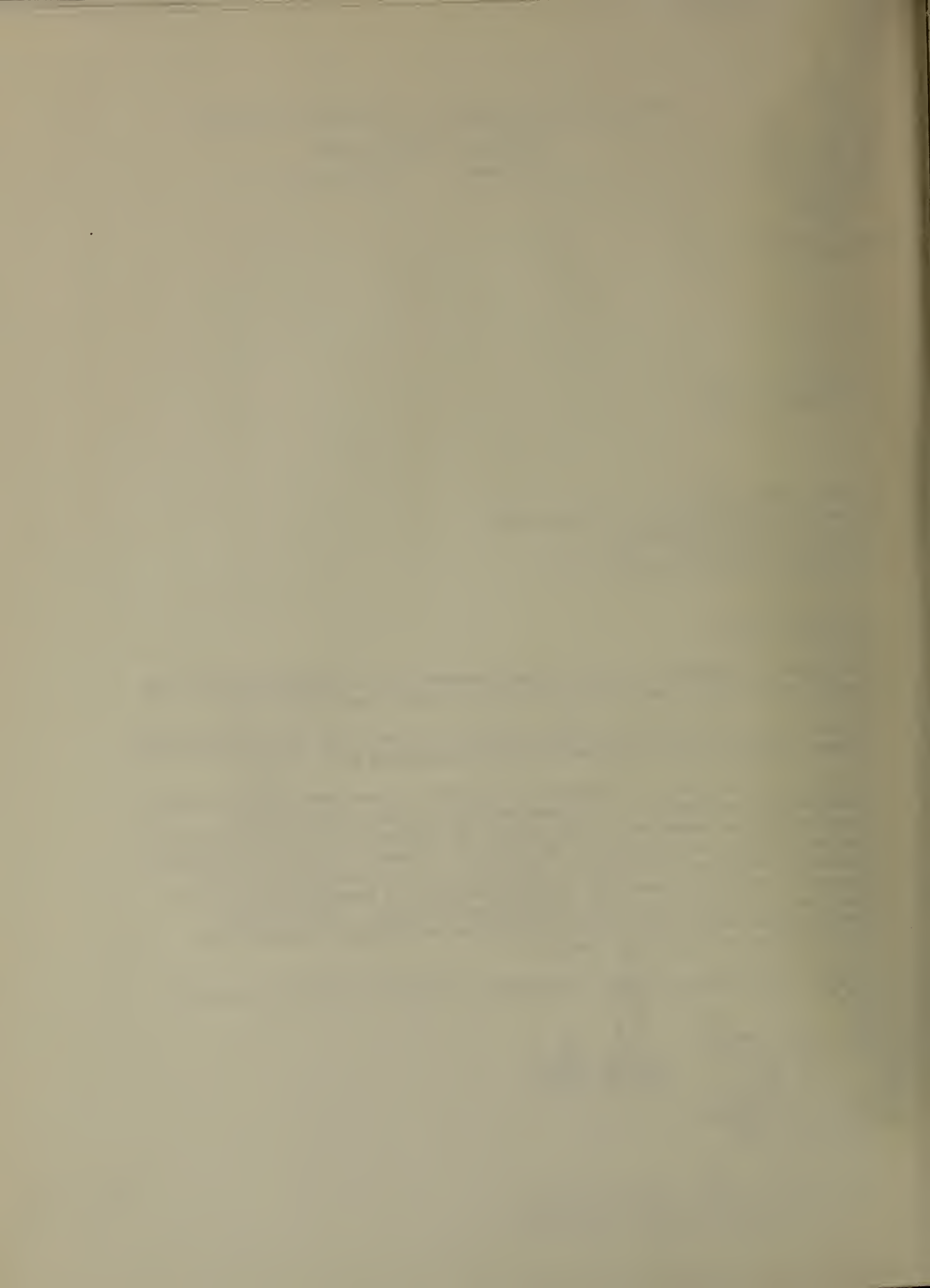


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Epilogue

Appendix - Testimony of Michael S. Dukakis
 Testimony of Evelyn F. Murphy

1. SUMMARY OF RECOMMENDATIONS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT
FOR PROPOSED LEASE SALE 42

A review of the draft Environmental Impact Statement for Proposed Lease Sale # 42 has been conducted from the standpoint of policy (which tracts, if any to include in the lease sale, and what restrictions, if any, to place on the conduct of activities after the lease sale) and technical accuracy. The procedure has been to compare the findings of the Bureau of Land Management on potential problems resulting from oil and gas exploration and development and proposed mitigating measures with those of the Commonwealth of Massachusetts.

Massachusetts' evaluation and recommendations have previously been set forth in documents approved by the Development Cabinet and submitted to the Department of Interior on June 2, 1976 and October 29, 1976. The results are recommendations to the Secretary of Interior regarding tract withdrawals, lease stipulations, and operating orders, as summarized below.

Tract Withdrawals (Chapter 2)

A total of twenty-six (26) tracts have been recommended to be withdrawn from proposed Lease Sale # 42, some 14 percent of the total lease sale area. On June 2nd, Governor Dukakis recommended that 9 of the 26 be withdrawn immediately, and that trajectory studies be conducted by the Department of Interior on 17 others. The results of the trajectory study indicate that these 17 nearshore tracts have the same characteristics as the other 9 - high risks of spills coming ashore and damaging spawning or biologically important areas. The Governor has subsequently requested that they also be withdrawn from the lease sale. The draft Environmental Impact Statement has also suggested that the Secretary of Interior could consider withdrawing these 26 blocks, - and, potentially, 11 others - from the proposed lease sale.

Lease Stipulations (Chapter 3)

The Bureau of Land Management has recommended several lease stipulations, in either committed or uncommitted form. Among the stipulations to which Interior is committed, we endorse the following:

- Proposed Lease Stipulation 1, requiring studies of significant cultural resources in the area and locations of operations so they will not harm these resources (D.E.I.S. page 1176).
- Proposed Lease Stipulation 5, requiring the lessee to provide information to the states about onshore activities during the exploration phase (D.E.I.S. page 1184).

- Proposed Lease Stipulation 6, requiring a special oil spill contingency plan for Muskeget Island Seal Colony (D.E.I.S. page 1186).

Among the lease stipulations to which Interior is not committed, we endorse the following and recommend they apply to Lease Sale 42:

- Uncommitted Mitigating Measure 7, proposing the development of a fisheries advisory panel which would serve as a subgroup of the O.C.S. Advisory Board (D.E.I.S. page 1188).
- Uncommitted Mitigating Measure 8, proposing the establishment of a compensation fund for damages incurred by fishermen as a result of equipment loss due to offshore petroleum facilities.

In implementing these recommendations, Interior should work closely with the Office of Lieutenant Governor Thomas P. O'Neill, III, which has already broken the ground in setting up a similar advisory panel for Massachusetts and through the generosity of the oil industry, a liability/compensation fund.

Finally, there are other stipulations proposed by Interior which address problems of mutual concern, but which fall short of mitigating them. We recommend amendments as follows:

- Proposed Lease Stipulation 2, requiring studies of biologically sensitive areas and the conduct of operations so as not to adversely affect the area. Biologically sensitive areas should be defined to include areas important for spawning, lobstering, and scalloping. The Supervisor's determination of safe conduct should be made upon consultation with the states.
- Proposed Lease Stipulation 3, authorizing the Supervisor to take steps to minimize the number of structures on the O.C.S. The Supervisor shall require unitization where this will result in fewer structures.
- Proposed Lease Stipulation 4, requiring pipeline burial wherever technically and economically feasible. Massachusetts' recommendations are to require pipeline burial wherever technologically feasible, and protection by concrete shrouding wherever technologically infeasible. Also, pipelines, gathering lines, flow lines will be mapped and the maps distributed to states and interested parties. U.S.G.S. should undertake an active program of surveillance. Construction activities should be timed so as not to coincide with peak spawning periods.
- Proposed Lease Stipulation 7, requiring vessel corridors on certain tracts. Massachusetts' recommendations are to establish vessel corridors for the entire lease sale area, not just specific tracts.

- Proposed Lease Stipulation 8, requiring special procedures for disposing of drill cuttings and drilling muds and that formation waters be reinjected. Massachusetts' recommendations are to divide this stipulation into two separate sections. Section A would require shunting of drill cuttings and drilling muds in prime spawning areas and we have specified the most important tracts. Section B would require that drill cuttings and muds be transported out of tracts important for scalloping and lobstering to predetermined disposal sites.

There are two areas of concern which are not covered by any of the proposed lease stipulations, in either committed or uncommitted form. We recommend the addition of two lease stipulations:

- Proposed Lease Stipulation 9, requiring site specific hazard surveys of the ocean bottom.
- Proposed Lease Stipulation 10, requiring notification of intensive seismic surveys through announcements in the Notice to Mariners.

Operating Orders (Chapter 4)

On October 29, 1976, the Secretary of the Executive Office of Environmental Affairs forwarded preliminary comments on draft Operating Orders for the North Atlantic as published in the July 22, 1976 Federal Register.

Highlights of our comments are the following:

- Order No. 1 - Identification of wells, platforms, structures, and subsea objects. Massachusetts has recommended that adequate sounding and lighting devices be required for fixed and non-fixed structures and that the definition of subsea objects include temporarily abandoned wells, subsea well completions, and bottom debris dumped by accident or jettisoned in bad weather.
- Order No. 2 - Drilling Platforms and Vessels. We have recommended standardization of data collection already required under Section 1.c.; the issuance of a "Certification of Fitness" for drilling platforms and vessels; hazard surveys of the ocean bottom and sub-bottom; the curtailment of "critical operations" under certain circumstances.
- Order No. 3 - Plugging and Abandonment of Wells. We have requested clarification of the definition of abandonment and recommended removal of well casing to a depth of at least 60' below the ocean floor wherever sand waves are hazardous.
- Order No. 7 - Pollution and Waste Disposal. The major recommendations for this order are: the shunting of drilling muds and drill cuttings; the prohibition of "bubbling off" and dumping of equipment and debris in the open ocean; the marking of all equipment transported offshore;

improved training programs for personnel in installing and maintaining equipment including instruction about the sensitivity of the North Atlantic commercial fishing industry to offshore operations; notification of state officials about all oil spills within specified time periods; and the placement of containment equipment in offshore locations.

- Order No. 15 - Submittal of Information for Plans for Development. We support this Order and expect to suggest some changes at a later date.

The U.S. Geological Survey and Massachusetts officials will meet in January, 1977 to go over these preliminary comments. Prior to that meeting, Massachusetts will submit preliminary comments on draft O.C.S. Orders 4, 5, 12, and 15.

Technical Comments (Chapters 5 and 6)

Several deficiencies emerged in a line by line review of the draft E.I.S. (Chapter 6). As a result, we have recommended (Chapter 5) that new information be added or that analysis be completed for three general topics: commercial fisheries, onshore impacts, and oil spills.

With regard to commercial fisheries, three issues should be addressed. First, the final E.I.S. should provide more analysis of the acreage removed from fishing due to the entire range of structures, pipelines, gathering lines, flow lines, tanker loading zones, supply vessel corridors, and suspended wells, as well as platforms and rigs.

Second, the extension of the United States' jurisdiction to 200 miles will become effective in March, 1977 and will contribute to the revival of our domestic fishing industry. The final E.I.S. should discuss this revival and its implications for landings, processing plants onshore, fishing vessels and labor.

Finally, with regard to commercial fishing, we request further analysis of the effects of oil spills on fish stocks. While damage to plankton, fish eggs, and larvae are documented, the reductions in future catches as a result of possible oil damages are not. Detailed analysis of the possible range of loss of plankton and future fish catch should be carried out for spills between 50 and 1,000 barrels from each of the 13 hypothetical spill locations on the Georges Bank.

With regard to onshore impacts, there are two deficiencies. The baseline data are obsolete. Population, employment and land use statistics prepared and frequently updated by state and regional planning agencies are better approximations than T.R.I.G.O.M. data. Furthermore, the assessment is narrowly confined to primary impacts on the region as a whole. Numbers of new facilities, acreage, new employees, and population increases are given, but it is assumed that, when spread over the region as a whole, the effects are negligible. The very problem faced by state and local officials is that these impacts could be monumental if, as the draft intimates, they cluster in one portion of the North Atlantic region, namely southeastern New England. The problem is compounded by secondary

impacts on housing, schools, water supply and sewage treatment systems, and transportation. The final E.I.S. should include estimates of demands for services and facilities generated by onshore development. Further, it should estimate the capacity of southeastern New England to accomodate these new demands.

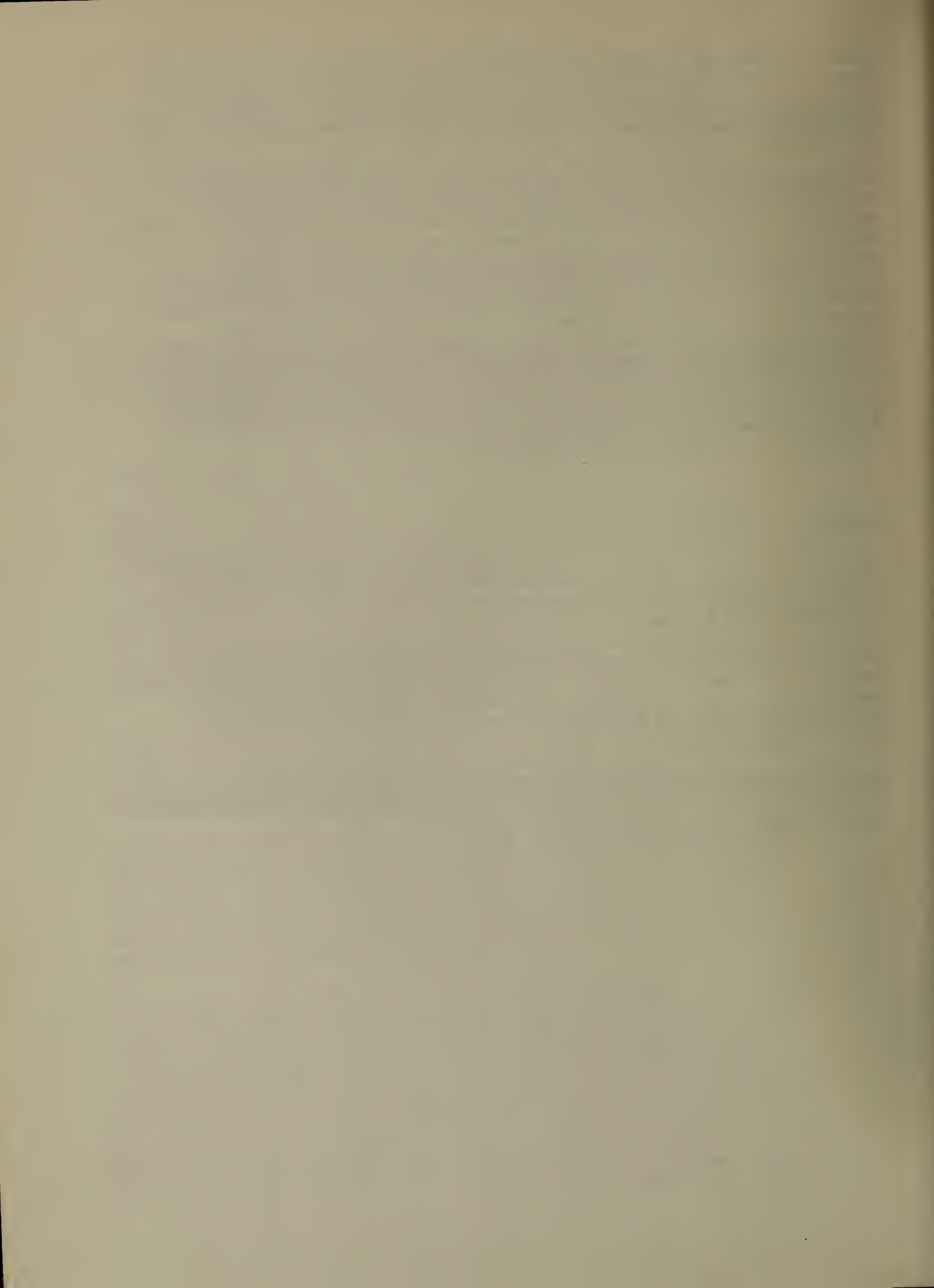
The third major area of concern is oil spills. Although this should be addressed primarily in the development E.I.S., some mention should be made here. The calculations of oil spill risks do not account for accidents in offshore loading and storage operations and vessel collisions. Transferring oil from wells to tankers headed for the mid-Atlantic will unquestionably cause spills. The risks are heightened considering the vulnerability to collisions and severe storms, and the fact that there are dozens of tracts within or adjacent to the four major traffic lanes criss-crossing southeastern New England waters. The final E.I.S. should include probabilities of vessel collisions in the North Atlantic accounting for North Atlantic sea and weather conditions and the characteristics of North Atlantic ocean-going traffic. In turn, the oil spill risk analysis should account for the probabilities of vessel collisions and accidents in offshore loading and storage operations.

Epilogue

As a policy and management tool, the draft E.I.S. on proposed Lease Sale 42 misses the mark of excellence that we would like to see as we embark on a quest for exploration and development of oil and gas and the revival of the commercial fishing industry.

The missing ingredient is not a consequence of a hurried preparation. Rather, a pre-lease sale E.I.S. is trying to do what it cannot at this early stage in the process. Put simply, it seems the document is trying to address development and production impacts before we have the faintest idea of the magnitude of the resources.

Our recommendation is that the Department of Interior prepare a Development Phase Environmental Impact Statement - for the lease sale area as a whole - prior to approval of the first Development Plan.



2. RECOMMENDATIONS FOR TRACT WITHDRAWALS FOR LEASE SALE #42

A total of twenty-six (26) tracts have been recommended to be withdrawn from proposed Lease Sale #42; some 13 percent of the total lease sale area. On June 2nd, Governor Dukakis recommended that 9 of the 26 be withdrawn immediately, and that trajectory studies be conducted by the Department of Interior on 17 others. The results of the trajectory study indicate that these 17 nearshore tracts have the same characteristics as the other 9 - high risks of spills coming ashore and damaging spawning or biologically important areas. The Governor has subsequently requested that they also be withdrawn from the lease sale. The draft Environmental Impact Statement has also suggested that the Secretary of Interior could consider withdrawing these 26 blocks - and, potentially, 11 others - from the proposed lease sale.

The Governor's June 2nd and December 17th letters follow in this chapter.

Commonwealth of Massachusetts

Recommended Tract Withdrawals,
Mitigation Actions, and
Lease Stipulations for
Outer Continental Shelf
Lease Sale # 42

Submitted to the Bureau of Land Management
United States Department of Interior

June 2, 1976



THE COMMONWEALTH OF MASSACHUSETTS

EXECUTIVE DEPARTMENT

STATE HOUSE • BOSTON 02133

MICHAEL S. DUKAKIS
GOVERNOR

June 2, 1976

Mr. Curt Berklund
Director
Bureau of Land Management
Department of Interior
Washington, D.C. 20240

Dear Mr. Berklund,

As part of Massachusetts' continuing effort to supply the Bureau of Land Management with information on resources of critical concern to the state in the area of the Georges Bank, I am submitting to you, formal recommendations for tract withdrawals, mitigation measures, and lease stipulations for Outer Continental Shelf Sale # 42.

Massachusetts feels that fishing interests and oil interests will be made more compatible on the Georges Bank if our recommendations are adopted.

Should you desire additional information, we will be pleased to provide it.

Sincerely,

Michael S. Dukakis
Governor

MSD:JL:sar

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A. The Setting

B. Requested Actions

C. Conclusion

Attachment A - Lease Stipulations Requested
by Massachusetts

Attachment B - Lease Stipulations proposed for
Sale # 40 (Baltimore Canyon)

Attachment C - Supporting Data for Requested
Actions

Attachment D - Letter from Secretary Evelyn F. Murphy
to Mr. Curt Berklund, August 18, 1975

THE SETTING

Massachusetts faces two opportunities, both important in the long term to the quality and cost of living here. Exploration for oil and natural gas on the Georges Bank offers an opportunity for less dependence on costly foreign sources of energy if significant deposits can be found. The passage of federal legislation effecting control of economic resources within 200 miles of our shores offers another opportunity - the revival of our fishing industry.

Both opportunities share a common trait: each must be realized in the same area, the Georges Bank.

Such a situation might seem unfortunate, if these opportunities were assumed to be in conflict, that is, competing for, or mutually exclusive within, the same space. "Fish (or food) versus fuel" is a simplified statement of that conflict.

Fortunately, though, because of the existence of two compelling, timely opportunities, the state has intervened to exercise leadership in the public interest, undertaking measured, detailed examination of both. Almost a year has been spent on data gathering and analyses. During that time, the Commonwealth has taken only one action with regard to tract selection for leasing. Information identifying areas of high and medium fishing interests was informally submitted to the Department of Interior.* The outcome of the last year's work leads to a recommendation now for further formal action vis-a-vis the Department of Interior.

The recommendations are based on data about fishing and oil interests on the Georges Bank. Four important characteristics of the data should be noted:

- 1.- Fishing on the Bank is widespread; areas of particular interest to fishermen change through time.
- 2.- According to historical data for fishing catch over the last ten years, the bulk of the tracts to be leased are in medium to low intensity areas. Some statistics illuminate this point:
 - of the 206 tracts considered for leasing, 37 (or 18%) are situated in areas of high fishing intensity;
 - these 37 tracts constitute less than 3% of the high fishing tracts on the Bank.

* See letter from Evelyn F. Murphy to Curt Berklund, Director, Bureau of Land Management, August 18, 1975. (Attachment D)

- 3.- Yet, with overfishing on the Georges Bank, recent trawling activity is reported to have shifted into areas most likely to be leased - the stretch of tracts along the southeastern border. While this shift has not been of sufficient magnitude or duration to emerge in the systematically collected data, many fishermen corroborate this change, as does the recently released N.E.R.C.O.M. study.*
- 4.- Some species spawn across vast areas of the Bank; others have highly localized, stable spawning grounds such that an oil spill could seriously endanger the species.

Given the Commonwealth's policy that we seek to take advantage of both opportunities to every extent possible, two questions become the focus of our actions:

- How do we permit ample exploration and production to happen so that we learn what deposits of oil and natural gas, if any, exist on Georges Bank, and are able to exploit them;

and, at the same time,

- How can exploration and possible production be accommodated in ways that cause least disruption to spawning and fishing on the Bank?

The following analysis addresses these questions in reverse order. First, steps are recommended that accommodate oil activities with least disruption to our fishing industry. And then, we assess whether or not these steps "permit ample exploration and production to happen".

Two Constraining Factors

Before presenting recommended steps to protect fishing interests, one major additional factor - a possible disruption onshore - must serve as a constraining influence on permissible oil activities. Cape Cod and the nearby islands would be most affected by "mistakes" in exploration, that is, oil spills that might wash onto beaches. The Cape and Islands are recreational resources that all citizens of the Commonwealth should be able to enjoy. Moreover, the economy of these areas depends markedly on tourism. For reasons of recreation and economy, then, protection of these areas is an element of the State's policy and actions.

* Fishing and Petroleum Interactions on Georges Bank, Volume I. New England Regional Commission, Technical Report 76-3 (1976), Plate 5. This report was submitted to Secretary Thomas R. Kleppe, Department of Interior, on February 26, 1976 by the New England Governors Conference.

The second constraint concerns the preservation of certain species of fish. While fishing activity may move from place to place, some spawning areas do not exhibit such changes in location. Special consideration must be given to protect small spawning areas so that species are not in danger of decimation.

REQUESTED ACTIONS

The Commonwealth requests from the Department of Interior the following seven modifications in its plans:

- 1.- Lease stipulations. Stipulations should be included in ALL leases that the Department of Interior issues to oil companies so that fishermen can continue to fish in areas occupied by oil rigs. Given the shifts in location of high catch areas, and given the generally widespread fishing activity on the Bank, lease stipulations are essential to encouraging and ensuring the vitality of the fishing industry.

The proposed stipulations address both the problems of pre-emption of fishing grounds by rigs, platforms, pipelines, and debris, and the problem of oil spills. The Department of Interior is now proposing stipulations in leases for the Baltimore Canyon. The stipulations recommended for the Georges Bank are similar to, but build more sensitivity into, those proposed for the Baltimore Canyon, Lease Sale # 40. (See Attachment A.)

- 2.- Withdrawal of tracts that represent a confluence of three problems - high fishing interests, potential for spills washing ashore, and possibility of spills near spawning areas. Even with lease stipulations, there are a few tracts - 7 in number - that represent risk, such a combination of risk that it is desirable to have these withdrawn. (These are colored in red on the attached map.)
- 3.- Trajectory studies. Other tracts - colored in green on the attached map - are situated such that there is some likelihood that a spill could wash ashore. We recommend that the Bureau of Land Management conduct a contoured trajectory study on these tracts in order to reveal the oil spill risks attendant on each tract to the Massachusetts tourism and recreation industries. Seventeen tracts are at issue here. Without knowing the likelihood of spills washing ashore, we are reluctant to recommend further stipulations or withdrawal regarding these tracts.
- 4.- Withdrawal of two tracts in Lydonia Canyon. The 100-fathom contour in Lydonia Canyon is an important lobster-fishing area because lobsters cluster along this line. Tract 445 at the head of the Canyon also presents geologic safety hazards to platforms because of the slopes involved. (These tracts are colored in yellow on the attached map.)

- 5.- Directional drilling in areas of high fishing and lobster tracts. Thirteen tracts (including the two lobster tracts in # 4 above) can be explored by directional drilling and field unitization to minimize structures. This alternative allows for minimal disruption to fishing and lobstering. (These tracts are colored in blue and yellow on the attached map.) The yellow tracts have been proposed for withdrawal; the blue tracts (high fishing) are not being proposed for withdrawal.
- 6.- Tracts in the area disputed with Canada on the eastern portion of the Bank should be retained as selected tracts, but should not be leased until the dispute is settled. Therefore, Massachusetts makes no recommendations for withdrawal or stipulations on these tracts at this time. It is recommended that the dispute be settled as quickly as possible. Chevron Oil Company recommended to the Department of Interior in August of 1975 that all tracts in the disputed area be withdrawn from leasing, since companies would not be willing to risk large amounts of capital in areas of uncertain national jurisdiction.
- 7.- A process for monitoring activities during exploration and production. These measures will be effective if carried out in a cooperative spirit. Therefore, we request the Department of Interior and the Department of Commerce to set up a board consisting of fishing and oil interests, with the specific purpose of monitoring the implementation of lease stipulations. The board should be established as a single subset of both of the National Oceanic and Atmospheric Administration's regional fisheries management councils under 200-mile fisheries jurisdiction, and the Department of Interior's regional O.C.S. advisory board. Such a board can serve a major role in separating rumors from facts and ensuring that both interests see the extent to which the other is trying to facilitate compatible activities on the Bank. The board should build on the work already begun by the New England Marine Industries Council in bringing the two industries together.

CONCLUSION

Massachusetts feels the above recommendations will permit ample exploration to determine the amount and nature of any oil or gas deposits on the Bank, and ample production, should oil or gas be discovered.

Withdrawals are recommended for only nine out of 206 selected tracts, or less than 5%. All of the other recommendations have to do with the way oil activities are practiced on the Bank, and therefore do not significantly alter opportunities for exploration and production. At the same time, the above recommendations ensure that the known resources of the Bank will be protected, and offshore disruption of the existing fishing industry will be minimized.

ATTACHMENT A - LEASE STIPULATIONS

Withdrawing some tracts may be of value, but since the whole Bank is widely fished, and since many of the present prime fishing grounds are in areas of high oil company interest, rather than in areas of historically high fishing activity, stipulations would allow the fishermen to continue to fish in areas occupied by oil activities. These stipulations address both the problems of pre-emption of fishing grounds by rigs, platforms, pipelines and debris, and the problem of oil spills.

These stipulations are proposed for all tracts leased on Georges Bank. The most important are No.'s 1-8. Number 1 is particularly crucial, because it will allow trawling between platforms, which would be prevented if gathering lines were not buried.

1.- Pipeline, Gathering Line and Flowline Burial

- a) Pipelines (both gas transmission lines and oil trunk lines) and gathering lines (lines which transport oil and gas between platforms) shall be buried to a depth of six feet, regardless of water depth, where technologically feasible. In cases where flowlines connect subsea completion systems to production facilities at some distance from the subsea completions themselves, the flowlines shall also be buried to a depth of six feet where technologically feasible. Burial would not be necessary if the total length of the flowline was included in the safety zones around both the subsea completion system and the production facility. (Present regulations, based on the Gulf of Mexico experience, require pipeline burial to only three feet in less than 200 feet of water.)
- b) To ensure that the lines remain buried, they shall not merely be placed in an open trench, but shall be covered over. Because of bottom conditions on the Eastern O.C.S., pipelines that are trenched or laid on the bottom will not bury themselves by sediment transport, as happens in the Gulf.
- c) Surveillance shall be undertaken by the U.S. Geological Survey or the Coast Guard to insure lines remain buried.
- d) In areas where burial is not technologically possible, pipelines, gathering lines, and flowlines shall be protected by concrete casing or other appropriate measures, to prevent their damage by anchors, trawl doors, and other fishing gear, and subsequent oil leakage. In addition, lines shall, if possible, be shrouded to prevent damage to fishing gear.
- e) Construction activity connected with pipelines, gathering lines, and flowlines shall be timed so as not to coincide with peak spawning times of Georges Bank species. Most Bank species are bottom spawners, and turbidity caused by construction activities would adversely affect eggs and larvae.
- f) Pipelines, gathering lines, and flowlines shall be mapped at a scale of 1 inch to 2,000 feet by B.L.M. or N.O.A.A., and these maps made available to the states, fishermen, and other interested parties.

2.- Bottom Protrusions

Protrusions such as suspended wells (which can extend 15 feet above the bottom surface), pipeline valves, blowout preventors, and other installations, can snag fishing gear. Pipeline valves shall be shrouded to prevent such snagging. Suspended wells and other installations shall be designed to minimize gear fouling, shall be marked at the surface by a lighted buoy, and shall, if possible, be shrouded.

3.- Dumping of Equipment and Other Debris

- a) U.S.G.S's present regulations in this area shall be more strictly enforced.
- b) Lessees shall require of their subcontractors, by written contract, prevention of dumping.
- c) Lessees shall be required to educate their employees and their subcontractors to the problems caused to fishermen by equipment dumping.
- d) As soon as a new obstruction or loss of equipment is reported, the Coast Guard shall list it by LORAN bearings in their Notice to Mariners. This stipulation would prevent damage by the obstruction in the one-year period (at minimum) that it takes to get a new obstruction printed on nautical charts. It is especially important in view of the fact that lost pieces of equipment may not get on nautical charts at all, unless they are considered actual hazards to navigation.
- e) All equipment used by lessees or their subcontractors shall be marked with the lessee's or subcontractor's name, so that in case of loss, liability can be established for any damage claims or penalties.

4.- Subsea Completion Systems

If used on the Georges Bank, subsea completion systems shall be clearly marked on the surface and a safety zone established around them to prevent trawling and dredging in the area for the protection of both industries. The general impact of such a facility on fishing would be comparable to a medium-sized shipwreck, according to a Woods Hole study on fisheries-petroleum interaction.*

* Effects on Commercial Fishing of Petroleum Development Off the Northeastern United States. Woods Hole Oceanographic Institution, April, 1976, page 15.

5.- Placement of Structures

Structures shall be kept to a minimum, and placed so as not to interfere with other uses, such as commercial fishing. Unitization shall be required of adjacent lessees to insure a minimal number of structures and to maximize the possibilities of directional drilling. Under current U.S.G.S. regulations, states are able to review development plans to insure that structures are not placed in areas detrimental to fishing. Exploratory drilling plans shall also be allowed review by states. Both exploratory and development plans shall be reviewed by representatives of the fishing industry as well. All other conditions required by B.L.M. under this standard stipulation shall also be required. (See attached Stipulation # 3 from the Mid-Atlantic Sale Draft E.I.S.)

6.- Oil Pollution

Because a number of selected tracts on the Bank are in or near spawning grounds for cod, haddock, whiting, herring, and red hake, and because of the importance of the Bank fishery in general, the best available spill prevention equipment shall be required of lessees on all operations.

7.- Transport of Oil from Georges Bank

Where technologically and economically feasible, oil shall be piped rather than tankered or barged ashore. This stipulation is important in light of the severe storm and fog conditions of the Bank.

8.- Cultural and Biological Resources

B.L.M.'s standard stipulations on these two topics shall be required. These stipulations require protection by the lessee of any cultural resources (such as historic shipwrecks) and areas of special biological significance discovered during exploration, development and production. (See attached Stipulations No.'s 1 and 2.)

9.- Pipeline Corridors

B.L.M.'s stipulation requiring pipelines to be placed in certain corridors designated by the Bureau shall be required, and shall include provisions for review of the pipeline corridors by adjacent states and fishing industry representatives. (See attached Stipulation No. 5.)

10.- Traffic Lanes

Lessees shall be required to establish lanes in which their supply vessels will move, to minimize:

- a) Interference with slower-moving commercial fishing and other vessels;
- b) Interference with vessels actually engaged in commercial fishing operations;

- c) Possibilities of accidents with wooden-hulled boats (which constitute a large part of the New England fishing fleet), which present poor radar targets in the severe fog conditions which prevail on the Bank in the summer;
- d) Possible interference with areas of heavy recreational boating and fishing use, such as the channels between the Elizabeth Islands in Massachusetts.

11.- Intensive Seismic Surveying

Lessees shall be required to:

- a) Make known dates and patterns of intensive seismic work (done after the lease sale) to fishermen, through the Coast Guard's Notice to Mariners and radio broadcasts, so that:
 - 1) dates of surveying may be coordinated with particular fish runs to ensure that an area will not be removed from fishing at its prime yield time; and
 - 2) fishermen may avoid the area during surveying.
- b) Coordinate intensive seismic surveying among leaseholders to reduce the number of boats in operation at one time in a particular area.

E. Special Stipulations

Leases for oil and gas exploration and development are subject to all OCS operating regulations and orders. Additionally, in some cases, the lease may include special stipulations¹ which are considered necessary for the protection of a particular resource or activity. It is proposed that the following stipulations be applied to any lease resulting from this proposed sale.

1. Cultural Resources

If the Supervisor, when having reason to believe that a site, structure, or object of historical or archeological significance, hereinafter referred to as "cultural resource," may exist in the lease area, gives the lessee written notice that the lessor is invoking the provisions of this stipulation, the lessee shall immediately upon receipt of such notice comply with the following requirements:

Prior to any drilling activity or the construction or placement of any structure for exploration or development on the lease, including but not limited to, well drilling and pipeline and platform placement, hereinafter in this stipulation referred to as "operation," the lessee shall conduct geophysical surveys to determine the potential existence of any cultural resource that may be affected by such operations. All data produced by such geophysical surveys shall be examined by a qualified marine archeologist or archeological surveyor to determine if anomalies are present which suggest the existence of a cultural resource that may be adversely affected by any lease operation. If such anomalies exist the lessee shall:

¹The wording of the stipulations included in this section was agreed to in joint discussions of the BLM, USGS and Fish and Wildlife Service under procedures of Secretarial Order 2974. The wording of the cultural resources stipulation was originally developed in other operating areas with the cooperation of the National Park Service.

1) locate the site of such operation so as not to adversely affect the anomaly identified; or 2) establish, to the satisfaction of the Supervisor, on the basis of further archeological investigation conducted by a qualified marine archeologist using such survey equipment and techniques as deemed necessary by the Supervisor, either that such operation will not adversely affect the anomaly identified or that the potential cultural resource suggested by the occurrence of the anomaly does not exist.

Upon completion of any geophysical or other survey conducted for archeological purposes the lessee shall forward a report prepared by the archeologist or archeological surveyor to the Supervisor for his review. Should the Supervisor determine that the existence of a cultural resource which may be adversely affected by such operation is sufficiently established to warrant protection, the lessee shall take no action that may result in an adverse effect on such cultural resource until the Supervisor has given directions as to its disposition.

The lessee agrees that if any site, structure, or object of historical or archeological significance should be discovered during the conduct of any operations on the leased area, he shall report immediately such findings to the Supervisor, and make every reasonable effort to preserve and protect the cultural resource from damage until the Supervisor has given directions as to its disposition.

Archeology reports covering leases issued as a result of this proposed sale will be submitted to the Area Oil and Gas Supervisor of the Geological Survey and to the Manager of BLM. The Manager will review these reports and provide the Supervisor with recommendations for protection of any known or potential cultural resources identified therein. The Supervisor will consider these recommendations and any other relevant information at his disposal prior to issuing a permit for operations at a specific location within a lease.

2. Biologically Important Areas

Bureau of Land Management and other studies may not yet have located sites which could be biologically sensitive to drilling or contain undeveloped commercial fish or shellfish resources. This stipulation is designed to protect these sites.

Should any area of special biological significance be discovered during the exploration, development, and/or production stage(s) or as a result of Bureau of Land Management Baseline Studies, the lease block(s) or portion(s) thereof containing said area or resource shall not be explored and/or developed until the lessee has demonstrated to the satisfaction of the Supervisor that adequate technology and sufficient environmental safeguards exist and will be used to prevent to the maximum extent possible, using the best available technology and all reasonable care, detrimental impact upon said areas.

If the Supervisor when having reason to believe that such a site or resource may exist in the lease area, gives the lessee written notice that the lessor is invoking the provisions of this stipulation, the lessee shall immediately upon receipt of such notice comply with the following requirements: prior to any drilling activity or the construction or placement of any structure for exploration or development of lease areas including, but not limited to, well drilling and pipeline and platform placement, hereinafter in this stipulation referred to as "operation," the lessee shall conduct site specific surveys, as approved by the Supervisor, to determine the potential existence of any unique biological resource that may be adversely affected by any lease operation. If such surveys show anomalies that suggest the potential existence of a unique biological resource that may be adversely affected by any lease operation, the lessee shall:

- 1) Relocate the site of such operation so as not to adversely affect the anomaly identified; or 2) establish, to the satisfaction of the Supervisor, on the basis of the site specific survey, either that such operation will not adversely affect the anomaly identified or that the potential biological resource suggested by the occurrence of the anomaly does not exist.

All data obtained in the course of any biological surveys conducted pursuant to the provisions hereof shall be submitted to the Supervisor with any application by the lessee for drilling or other activity with a copy to the Manager, New York OCS Office. Should the Supervisor determine contrary to the contentions of the lessee, that the existence of a biological resource which may be adversely affected by such operation is sufficiently established to warrant protection, the lessee shall take no action that may result in any adverse effect on such resource until the Supervisor has given the lessee directions with respect to the resource.

The lessee agrees that, if any site, structure, or object of biological significance should be discovered during the conduct of any operations on the leased area, he shall report immediately such findings to the Supervisor, and make every reasonable effort to preserve and protect the resource from damage until the Supervisor has given the lessee directions with respect to the resource.

3. Placement of Structures

To reduce potential disturbance to other ongoing activities in the Mid-Atlantic OCS and the environment as a result of this sale, we propose this stipulation:

Structures for drilling or production, including pipelines and subsea systems, shall be kept to the minimum necessary for proper exploration, development, and production and, to the greatest extent consistent therewith, shall be placed so as not to interfere with other significant uses of the Outer Continental Shelf including commercial fishing. To this end, no structure for drilling or production, including pipelines and subsea systems, may be placed on the Outer Continental Shelf until the Supervisor has determined that the structure is necessary for the proper exploration, development and production of the lease area and that no reasonable alternative placement would cause less

interference with other significant uses of the Outer Continental Shelf, including commercial fishing. The lessee's exploratory and development plans, filed under 30 CFR 250.34, shall identify the anticipated placement and grouping of necessary structures including pipelines and subsea production systems, showing how such placement and grouping will have the minimum practicable effect on other significant uses of the Outer Continental Shelf, including commercial fishing.

It is within the authority of the Geological Survey and the Secretary to require unitization of a field, but to require this action before knowing the actual production characteristics of a field (by use of a special stipulation) would be unwise. The designation of specific pipeline corridors by BIM will serve to reduce the number of pipelines used. This stipulation is designed to keep the number of offshore facilities to a minimum.

4. Shipping of Oil

Because of the heavy tanker and barge traffic presently existing in the Mid-Atlantic, and resulting incidents of vessel accidents and pollution occurrences, we propose that to the most practical extent possible, oil produced in the Mid-Atlantic OCS be prohibited from transport via tankers and barges. The following stipulation would minimize such transport:

If feasible pipeline rights-of-way can be determined and obtained and, if laying such pipelines is technically and economically feasible, no crude oil production will be transported by surface vessel from offshore production sites to adjacent onshore facilities except in case of emergency. Determinations as to emergency conditions and the technical and economic feasibility of pipeline laying will be made by the Supervisor. For continuous production, transportation of crude oil by barge from offshore production sites to adjacent onshore facilities will not be permitted.

The phrase indicating exceptions relating to emergency conditions or special circumstances is included to encompass problems, such as relief of pressure or maintenance, where some oil is produced but cannot be disposed of in any other environmentally safe manner. Test production will be of short duration and will not require transport to shore.

Due to the present channel depths which tankers (if used) would operate in and expected production levels, we anticipate that tanker sizes employed would be well under 72,000 dead weight tons. Economic constraints dictate against using larger vessels and transferring the oil to barges in estuaries for final transshipment to refineries.

5. Pipeline Corridors

It is the intent of the Bureau to establish, wherever possible, pipeline corridors in the area of this proposed sale to minimize disturbance of the environment and disruption of other uses of the OCS. To this effect, the following provision shall apply to all leases in the event this proposed sale should proceed:

The lessor specifically reserves the right to require that any pipeline to be used for transporting production from this lease to shore be placed in certain designated areas or corridors.

6. Pipeline Burial

To reduce the potential of damage to pipelines caused by trawling gear and anchors and to reduce the threat of oil spills

resulting from such damage, the following stipulation will also apply to all leases in this proposed sale. Flowlines deliver oil and/or gas from offshore platforms to common carrier pipelines whereas gathering lines may take oil and/or gas from platform to platform or subsea system to platform.

Wherever technically and economically feasible, all pipelines, including both flow lines and gathering lines for oil and gas, shall be buried to a depth suitable for adequate protection from water currents, storm scouring, fisheries trawling gear, and other use and environmental factors as determined by the Department of the Interior permitting agency on a case-by-case basis.

Surveillance of all buried pipelines shall be conducted at regular intervals to ensure that they remain buried. Surveillance methods utilized shall be those specified in present and future OCS Orders and regulations or as approved by the Department of the Interior permitting agency.

7. Navigational Marking of Structures Other than Pipelines

The design of subsea production systems¹ are such so as to minimize potential damage and oil spills from anchor dragging or trawling doors. Most of these systems are particularly designed to withstand impacts much greater than might be encountered in the North Sea or Mid-Atlantic; the most likely impact would be for the trawl door or anchor to break off from the towing ship.² In the event of an accident, redundant shutoff valves both above and below the sea floor will automatically activate to stop the loss of oil

¹Appendix 4.

²H. Koster, Lockheed Petroleum Services Ltd., Vancouver, B.C., personal communication, 1975.

(the same holds true for temporarily abandoned wells). The special stipulation following is designed to mark the location of subsea systems and temporarily abandoned wells and to keep ship traffic at a minimum in this vicinity.

To reduce the potential of an accident from fisheries trawling gear or ship anchors, all structures except pipelines, placed on or rising above the ocean floor, as a result of this lease sale, including but not limited to subsea production systems or temporarily abandoned wells, shall be adequately marked according to methods determined by the Supervisor.

F. Other Mitigating Measures

1. Notices to Lessees and Operators

Operating Orders and Regulations and are used when expeditious clarifications, corrections, or additions to the orders and regulations are necessary. By issuing Notices to Lessees and Operators, the extensive amount of time necessary to amend and republish orders and regulations is avoided. None have been prepared to date for the Mid-Atlantic OCS.

2. Waivers of OCS Orders

A departure (waiver) from OCS Orders or other rules of the USGS Supervisor may be granted under 30 CFR 250.12(b), when such a departure is determined to be necessary for one of the following reasons:

- (a) The proper control of a well;
- (b) Conservation of natural resources;

ATTACHMENT C - SUPPORTING DATA FOR REQUESTED ACTIONS

This attachment supplies data on the thirty-seven tracts for which specific actions have been recommended. The following table lists the thirty-seven tracts by number, the recommended actions, and the data on which the recommendations are based.

FISHING ACTIVITY*

The fishing activity data is listed on a scale of very high (VH), high (H), medium (M), and low (L).

	<u>Fishing Activity: Days</u>	<u>Fishing Activity: Landings</u>
VH	1611-5625 days	7,255-31,743 metric tons
H	651-1610 days	3,215- 7,254 metric tons
M	157- 650 days	930- 3,214 metric tons
L	1- 156 days	1- 929 metric tons

The following codes have been used to identify domestic fishing grounds and spawning grounds (numbers 1, 2, 3, 4, 7, 10, are high value species).

Domestic fishing grounds (trawlers)

- 1.- lobster ground
- 2.- prime ground, especially yellowtail
- 3.- prime gray sole ground
- 4.- prime ground, especially cod and haddock
- 5.- fluke and butterfish ground
- 6.- inshore mixed groundfish

* Fishing and Petroleum Interactions on Georges Bank, Volume I, New England Regional Commission, Technical Report 76-3 (1976).

Domestic fishing grounds (other gear)

- 7.- prime scallop ground
- 8.- prime longline groundfish grounds
- 9.- longline ground for tilefish
- 10.- pot grounds (lobster and crab)

Information for lobster withdrawals has also been taken from data supplied by the Atlantic Offshore Fish and Lobster Association, Comment to Bureau of Land Management, August 18, 1975, and communications with the New England Fisheries Steering Committee.

Spawning grounds

- A.- Close to small sea herring spawning ground which would be severely impacted by a spill
- B.- In whiting and red hake spawning grounds

OIL SPILL HAZARD

- H.- High probability of oil spills impacting shoreline and/or small spawning grounds
- X.- Unknown, but suspected high probability of oil spill impact

Information for these classifications has been taken from:

- a) The Council on Environmental Quality, O.C.S. Oil and Gas: An Environmental Assessment, Washington, D.C. April, 1974. Volume I, page 91; Volume 5, "Oil Spill Trajectory Studies for Atlantic Coast and Gulf of Alaska", page 117.
- b) Communications with Professor John W. Devanney, III, Department of Ocean Engineering, Massachusetts Institute of Technology.
- c) The above referenced New England Regional Commission study.

GEOLOGICAL HAZARD

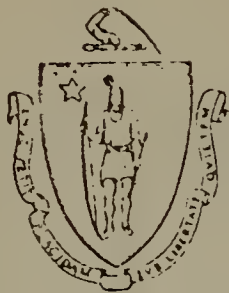
Geological hazards are presented on a scale of High (H), Medium (M), and Low (L). The classifications are based on the severity of slope determined from U.S. Geological Survey Chart # 13200 (1107).

Recommendation	Lease Block	Fishing Activity; Days	Fishing Activity; Landings	Domestic Fishing Grounds	Spawning Grounds	Oil Spill Hazard	Geological Hazard
Withdrawal for oil	NK19-8						
spill, high fishing and spawning grounds	600	H	H	4	A	H	-
	601	VH	VH	4	A	H	-
	643	VH	VH	4	A	H	-
	644	VH	VH	4	A	H	-
	687	VH	VH	4	A	H	-
	NK19-11						
	322	VH	VH	6	-	H	-
	323	VH	VH	6	-	H	-
Withdrawal, lobster	NK19-12						
	445	L*	L*	1,10	B	-	H
	537	L*	L*	1,10	B	-	L
Trajectory study	NK19-10						
	614	L	L	10	-	X	-
	615	L	L	10	-	X	-
	616	L	L	10	-	X	-

*Although these two tracts are rated low in fishing activity, they have a high economic value

Recommendation	Lease Block	Fishing Activity; Days	Fishing Activity Landings	Domestic Fishing Grounds	Spawning Grounds	Oil Spill Hazard
Trajectory study	NK19-11					
(cont.)	284	VH	M	4,6,8	A	X
	285	H	M	6,8	A	X
	286	H	M	6,7	A	X
	328	H	M	4,6,8	A	X
	329	H	M	6	A	X
	330	H	M	6	A	X
	331	H	M	-	A	X
	372	H	M	4,6,8	A	X
	373	H	M	6	A	X
	374	H	M	6	A	X
	375	H	M	-	A	X
	756	L	L	5,10	-	X
	800	L	L	5,10	-	X
<u>N</u>	801	L	L	5,10	-	X

Recommendation	Lease Block	Fishing Activity; Days	Fishing Activity; Landings	Domestic Fishing Grounds	Spawning Grounds	Oil Spill Hazard
Directional drilling	NK19-9					
to protect high fishing grounds	930	M	H	-	-	-
	931	H	H	2	-	-
	932	VH	H	2,7	-	-
	974	H	H	7	-	-
	975	H	H	2,7	-	-
	976	H	H	2,7	-	-
	NK19-12					
	6	H	M	2,7	-	-
	7	H	M	2,7	-	-
	8	H	M	2,7	-	-
	NK19-9					
	981	H	H	2,7	-	-
X	982	H	H	2,7	-	-



The Commonwealth of Massachusetts

Executive Office of Environmental Affairs

18 Tremont Street

Boston, Massachusetts 02108

Evelyn F. Murphy
Secretary

ATTACHMENT D

August 18, 1975

Mr. Curt Berklund, Director
Bureau of Land Management
Attention: 720
Department of Interior
Washington, D.C. 20240

Dear Mr. Berklund:

Attached are comments on leasing on the outer continental shelf prepared by the Executive Office of Environmental Affairs for the State of Massachusetts. This document and the enclosed map delineate various critical areas which potentially could be affected by the leasing process for oil and gas development on the Georges Bank. Massachusetts is submitting this information on fishing, submarine canyons, oil spill potential, geologic hazards and visual impacts on tourism to the Department of the Interior for informational use only. Coming to your office under separate cover will be two volumes of Georges Bank fishery data recently published by the National Marine Fisheries Service at Woods Hole, Massachusetts.

Consistent with the request of the five New England Governors for a six month extension for the submission of comments about the Georges Bank, the resource information attached should be considered as preliminary and will need further evaluation by both the States and the Department of the Interior before formal negative nominations are submitted. It is expected that the Department will give important and serious consideration to the resource data, and that this information and subsequent submissions will form the basis for tract selection between State and Federal officials. The State of Massachusetts looks forward to cooperating with your department on the matter of a proper and thorough analysis for the Georges Bank area.

Thank you for the opportunity to submit this resource information.

Very truly yours,

Evelyn F. Murphy
Secretary

EFM:sar
encl.



THE COMMONWEALTH OF MASSACHUSETTS

EXECUTIVE DEPARTMENT

STATE HOUSE • BOSTON 02133

MICHAEL S. DUKAKIS
GOVERNOR

December 23, 1976

Frank Basile, Director
New York Outer Continental Shelf Office
Bureau of Land Management
6 World Trade Center - Suite 600D
New York, New York 10048

Dear Mr. Basile:

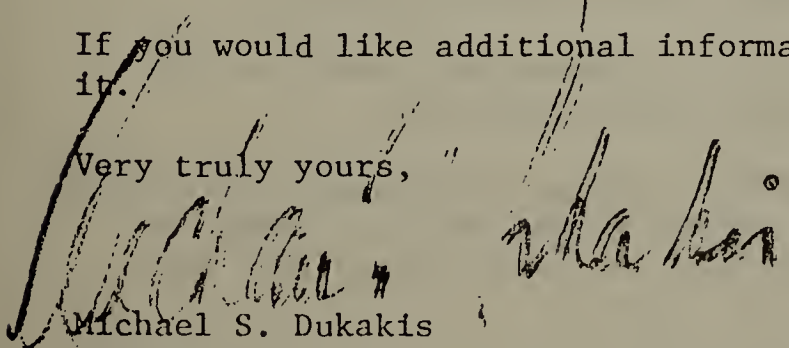
Enclosed are comments prepared by the Commonwealth of Massachusetts on the Draft Environmental Impact Statement for Proposed Lease Sale # 42.

We are forwarding them to you for incorporation into the Final Environmental Impact Statement which is scheduled to be published next spring.

I would like to draw your attention to Chapter 2, Recommendations on Tract Withdrawals, and Chapter 3, Recommendations on Lease Stipulations. Repeatedly, the Commonwealth has stated its desire to pursue the exploration and development of oil and gas resources in a manner mindful of the living, renewable resources sustained on the Bank. For the maximum protection possible, we are recommending the withdrawal of 17 nearshore tracts, in addition to the 9 withdrawals recommended last June. Also, we are recommending stiff restrictions on offshore operations, through Lease Stipulations and Operating Orders.

If you would like additional information, we would be pleased to provide it.

Very truly yours,


Michael S. Dukakis
Governor of the
Commonwealth

cc: Ronald Coleman, Director of B.L.M.
Curt Berklund, Director of B.L.M.



THE COMMONWEALTH OF MASSACHUSETTS

EXECUTIVE DEPARTMENT

STATE HOUSE • BOSTON 02133

MICHAEL S. DUKAKIS
GOVERNOR

December 17, 1976

Mr. Curt Berklund
Director
Bureau of Land Management
Department of Interior
Washington, D.C. 20240

Dear Mr. Berklund:

You will recall that the Commonwealth's June 1976 recommendations for tract withdrawals and mitigation measures for Lease Sale #42 included a request for trajectory studies on seventeen nearshore tracts (see map, Attachment A). In a follow-up meeting of Lt. Governor Thomas P. O'Neill, III, Massachusetts Secretary of Environmental Affairs Evelyn F. Murphy, and Secretary of Interior Thomas S. Kleppe, Secretary Kleppe agreed to conduct these studies; and such data were included in the draft Environmental Impact Statement on proposed Lease Sale #42.

We have compared the findings of Interior's trajectory studies (Attachment B) with our initial data (Attachment C) and have concluded that there are several convincing arguments for withdrawing these seventeen tracts from proposed Lease Sale #42:

First, of all the tracts offered in Lease Sale #42, according to Interior's data (Attachment C) these have the highest probabilities of spills washing ashore.

Second, the probabilities of oil spills damaging beaches and wildlife resources are higher for these tracts than any others.

Third, the probabilities of oil spills having an impact on cod, haddock, and silver and red hake spawning areas are high.

In addition to these facts, there is another circumstance surrounding these blocks of grave concern to us. These tracts are in or near the major entry and exit routes for Boston and New York Harbors (see map,

Attachment A). Ship traffic is heavy. Also, fishing vessel activity is extremely high for a majority of these blocks (see Attachment C, Fishing Activity Days and Fishing Activity Landings). Platforms and exploratory rigs located within these lanes would present a significant hazard to navigation. Collisions of vessels - particularly those involving tankers - or collisions of vessels and platforms would result in large oil spills. And, given the proximity of these tracts to shore and to significant biological resources, a large oil spill could have major consequences.

All these problems add up to a level of risk that we simply do not want to incur. The recommendation is that seventeen nearshore tracts - in addition to the nine previously recommended - be withdrawn from Lease Sale # 42. The twenty-six tracts constitute 13 percent of the total 206 tracts offered to be sold. (With regard to the 28 tracts withdrawn by the Department of Interior because of the U.S./Canadian boundary dispute, our previous recommendation was and still is, that the dispute be resolved immediately, so that tracts can be sold.)

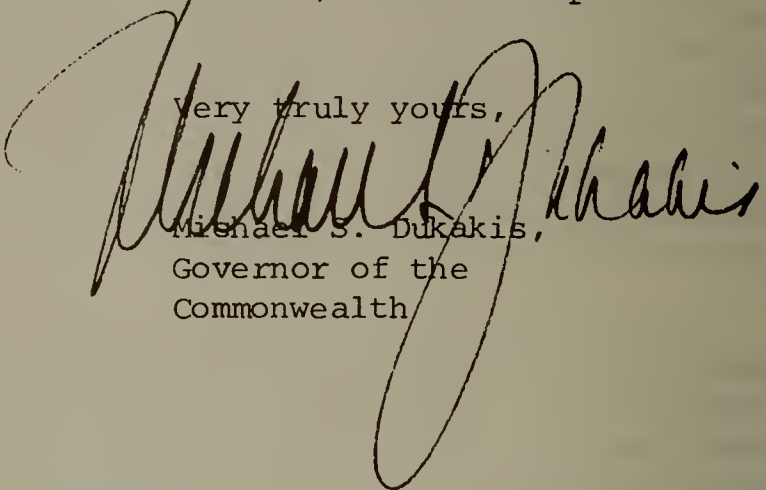
We want to make clear that this recommendation does not preclude the possibility of including any or all of the twenty-six tracts in a second North Atlantic Lease Sale at some future date. We recognize the shortcomings of the oil spill risk analysis, the lack of statistics on vessel collisions and vessel/platform collisions, and the ever-changing nature of biological and fishery resources. A corollary to our recommendation, therefore, is that the Department of Interior continue to study the twenty-six tracts. Oil spill hazards should be recalculated in the future, using new methods for assessing risks and site-specific wind and current data from the North Atlantic Environmental Studies Program. Interior should work closely with the New England Regional Fisheries Management Council in monitoring the importance of the tracts for spawning and commercial fishing activity. Finally, statistics on vessel collisions taking into account conditions peculiar to the North Atlantic, not the Gulf of Mexico, and the effects of these collisions on the risks of oil spills, should be developed.

Just one final word with regard to the other tracts in the North Atlantic which could be leased in the upcoming bidding. Repeatedly, the Commonwealth has stated its desire to pursue the exploration and development of oil and gas resources in a manner mindful of the living, renewable resources sustained on the Bank.

To do this, as much attention must be paid to the restrictions on offshore activities after the Lease Sale as to the tracts to be included in the Lease Sale itself. Therefore, Massachusetts, has forwarded detailed comments and revisions for Lease Stipulations to the New York BLM office and for Operating Orders to the USGS in Washington. I am mentioning these other submissions to demonstrate the sincerity of our efforts to see that offshore oil and gas activities are sensitive to our concerns.

Should you desire additional information, we will be pleased to provide it.

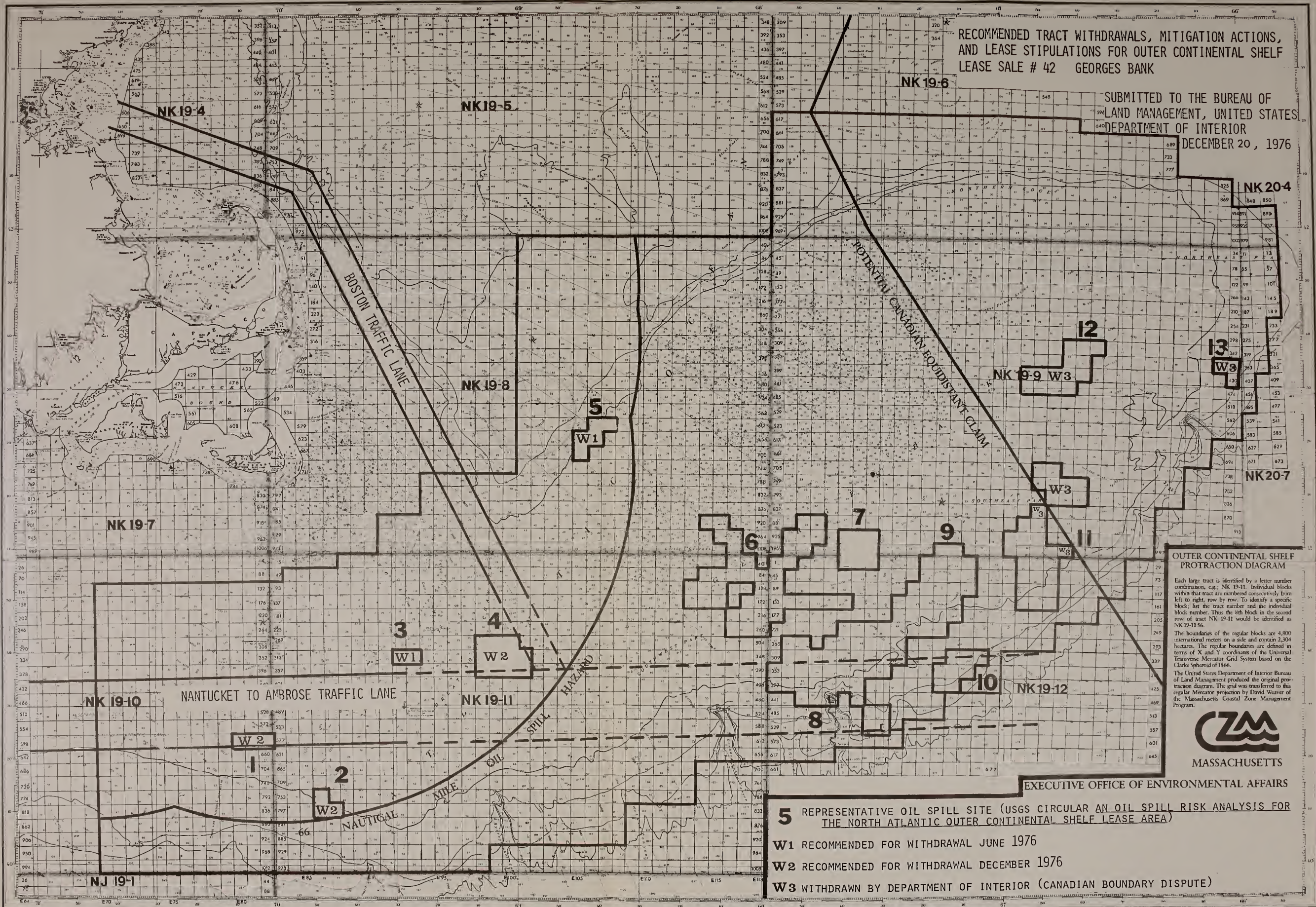
Very truly yours,


Michael S. Dukakis,
Governor of the
Commonwealth

MSD:PN/mc

RECOMMENDED TRACT WITHDRAWALS, MITIGATION ACTIONS, AND LEASE STIPULATIONS FOR OUTER CONTINENTAL SHELF LEASE SALE # 42 GEORGES BANK

SUBMITTED TO THE BUREAU OF
LAND MANAGEMENT, UNITED STATES
DEPARTMENT OF INTERIOR
DECEMBER 20, 1976



Percent probabilities that an oil spill occurring at potential production areas and along anticipated Transport routes in the North Atlantic lease area would impact important biological resources and recreation areas.

Resources Group	Production Area								Transportation Area							
	1B	2B	3A	4B	5A	6	7	8	9	10	11	12C	13C	A	B	C
Beaches and recreation areas	16	10	13	6	7	3	2	1	1	1	1	1	*	42	10	80
Wildlife sanctuaries & wintering areas	5	3	6	3	4	1	1	1	*	*	*	*	*	9	4	33
Coastal bird breeding areas	3	2	2	1	3	1	*	*	*	*	*	*	*	7	9	7
Pelagic bird nesting areas	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1	*
Pelagic bird wintering area	17	10	17	12	10	5	3	2	2	1	2	1	1	21	10	51
Eagle and osprey nesting sites	3	2	2	1	1	1	*	*	*	*	*	*	*	14	1	14
Cod and haddock spawning areas	25	20	31	25	40	25	27	16	20	12	26	52	19	10	37	13
Silver and red hake spawning areas	24	33	17	24	12	24	25	43	36	46	22	7	2	9	4	3
Sea herring spawning areas	8	6	16	8	12	5	4	*	2	1	2	4	1	3	12	3
Atlantic salmon migration routes	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Shortnose sturgeon areas	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Shellfish areas	6	3	4	2	3	1	1	1	1	*	*	1	*	20	50	40
Harbor seal whelping areas	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1	*
Grey seal whelping areas	1	1	*	*	*	*	*	*	*	*	*	*	*	2	*	7
Salt marshes	2	1	1	*	1	*	*	*	*	*	*	*	*	10	2	3
Eel grass beds	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Kelp beds	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Overall probability ashore	23	17	23	14	21	8	6	4	4	3	44	6	2	44	40	79
** Rank ordering- Oilspill Impact Risk	110	91	109	91	93	66	63	64	62	61	53	66	23			

* Less than 0.5 percent probability.

**Obtained by combining percent probabilities in each resource category (assuming equal weight or value for each resource). The higher the total, the greater the risk anticipated.

- A - Massachusetts' June, 1976 recommendations for withdrawal.
 B - Massachusetts' December, 1976 recommendations for withdrawal.
 C - Department of Interior's December, 1976 withdrawals: Boundary under dispute.

ATTACHMENT C

MASSACHUSETTS' EVALUATION OF 26 TRACTS
RECOMMENDED TO BE WITHDRAWN FROM LEASE SALE #42

	LEASE BLOCK	Fishing Activity - Days	Fishing Activity - Landings	Domestic Fishing Grounds	Spawning Grounds	Oil Spill Hazard	Geological Hazard	Collision Hazard
<u>JUNE 1976</u> <u>RECOMMENDATIONS:</u>								
NK-19-8	600	H	H	4	A	H	-	-
	601	VH	VH	4	A	H	-	-
	643	VH	VH	4	A	H	-	-
	644	VH	VH	4	A	H	-	-
	687	VH	VH	4	A	H	-	-
NK-19-11	322	VH	VH	6	-	H	-	H
	323	VH	VH	6	-	H	-	H
NK-19-12	445	L*	L*	1,10	B	-	H	VH
	537	L*	L*	1,10	B	-	L	VH
<u>DECEMBER 1976</u> <u>RECOMMENDATIONS:</u>								
NK-19-10	614	L	L	10	-	H	-	VH
	615	L	L	10	-	H	-	VH
	616	L	L	10	-	H	-	VH
NK-19-11	284	VH	M	4,6,8	A	H	-	H
	285	H	M	6,8	A	H	-	H
	286	H	M	6,7	A	H	-	VH
	328	H	M	4,6,8	A	H	-	H
	329	H	M	6	A	H	-	H
	330	H	M	6	A	H	-	H
	331	H	M	-	A	H	-	VH
	372	H	M	4,6,8	A	H	-	VH
	373	H	M	6	A	H	-	VH
	374	H	M	6	A	H	-	VH
	375	H	M	-	A	H	-	VH
	756	L	L	5,10	-	H	-	-
	800	L	L	5,10	-	H	-	-
	801	L	L	5,10	-	H	-	-

* Although these two tracts are rated low in fishing activity, they have a high economic value due to the price commanded by lobster

KEY TO ATTACHMENT C

FISHING ACTIVITY *

The fishing activity data is listed on a scale of very high (VH), high (H), medium (M), and low (L).

	<u>Fishing Activity: Days</u>	<u>Fishing Activity: Landings</u>
VH	1611-5625 days	7,255-31,743 metric tons
H	651-1610 days	3,215- 7,254 metric tons
M	157- 650 days	930- 3,214 metric tons
L	1- 156 days	1- 929 metric tons

The following codes have been used to identify domestic fishing grounds and spawning grounds (numbers 1, 2, 3, 4, 7, 10 are high value species).

Domestic fishing grounds (trawlers)

1. lobster ground
2. prime ground, especially yellowtail
3. prime gray sole ground
4. prime ground, especially cod and haddock
5. fluke and butterfish ground
6. inshore mixed groundfish

Domestic fishing grounds (other gear)

7. prime scallop ground
8. prime longline groundfish grounds
9. longline ground for tilefish
10. pot grounds (lobster and crab)

Information for lobster withdrawals has also been taken from data supplied by the Atlantic Offshore Fish and Lobster Association, Comment to Bureau of Land Management, August 18, 1975, and communications with the New England Fisheries Steering Committee.

Spawning grounds

- A. Close to small sea herring spawning ground which would be severely impacted by a spill.
- B. In whiting and red hake spawning grounds.

* Fishing and Petroleum Interactions on Georges Bank, Volume 1, New England Regional Commission, Technical Report 76-3 (1976).

OIL SPILL HAZARD

- H. High probability of oil spills impacting shoreline, small spawning grounds, and other biological resources.

Information for these classifications has been taken from:

- a) USGS Open File Report 76-620, An Oil Spill Risk Analysis for the North Atlantic OCS Lease Area.
- b) Communications with Professor John W. Devanney, III, Department of Ocean Engineering, Massachusetts Institute of Technology.

GEOLOGICAL HAZARD

Geological hazards are presented on a scale of High (H), Medium (M), and Low (L). The classifications are based on the severity of slope determined from U.S. Geological Survey Chart #13200 (1107).

VESSEL/STRUCTURE COLLISION HAZARD

Based on proximity to the Boston and the Nantucket to Ambrose shipping lanes and extensions.

- VH - Tracts within shipping lane
- H - Tracts within 5 miles of shipping lane

3. RECOMMENDATIONS ON LEASE STIPULATIONS

The Bureau of Land Management has recommended several lease stipulations, in either committed or uncommitted form. Among the stipulations to which Interior is committed, we endorse the following:

- Proposed Lease Stipulation 1, requiring studies of significant cultural resources in the area and locations of operations so they will not harm these resources (DEIS page 1176).
- Proposed Lease Stipulation 5, requiring the lessee to provide information to the states about onshore activities during the exploration phase (DEIS page 1184).
- Proposed Lease Stipulation 6, requiring a special oil spill contingency plan for Muskeget Island Seal Colony (DEIS page 1186).

Among the lease stipulations to which Interior is not committed, we endorse the following and recommend they apply to Lease Sale 42:

- Uncommitted Mitigating Measure 1, proposing the development of a fisheries advisory panel which would serve as a subgroup of the OCS Advisory Board (DEIS page 1188).
- Uncommitted Mitigating Measure 8, proposing the establishment of a compensation fund for damages incurred by fishermen as a result of equipment loss due to offshore petroleum facilities.

In implementing these recommendations, Interior should work closely with the Office of Lieutenant Governor Thomas P. O'Neill, III, which has already broken the ground in setting up a similar advisory panel for Massachusetts and through the generosity of the oil industry, a liability/compensation fund.

Finally, there are other stipulations proposed by Interior which address problems of mutual concern, but which fall short of mitigating them. We recommend amendments as follows:

- Proposed Lease Stipulation 2, requiring studies of biologically sensitive areas and the conduct of operations so as not to adversely affect the area. Biologically sensitive areas should be defined to include areas important for spawning, lobstering and scalloping. The Supervisor's determination of safe conduct should be made upon consultation with the states.
- Proposed Lease Stipulation 3, authorizing the Supervisor to take steps to minimize the number of structures on the OCS. The Supervisor shall require unitization where this will result in fewer structures.
- Proposed Lease Stipulation 4, requiring pipeline burial wherever technically and economically feasible. Massachusetts' recommendations are to require pipeline burial wherever technologically feasible, and protection by concrete shrouding wherever technologically infeasible. Also, pipelines, gathering lines, flow lines will be

mapped and the maps distributed to states and interested parties. USGS should undertake an active program of surveillance. Construction activities should be timed so as not to coincide with peak spawning periods.

-Proposed Lease Stipulation 7, requiring vessel corridors on certain tracts. Massachusetts' recommendations are to establish vessel corridors for the entire lease sale area.

-Proposed Lease Stipulation 8, requiring special procedures for disposing of drill cuttings and drilling muds and that formation waters be reinjected. Massachusetts' recommendations are to divide this stipulation into two separate sections. Section A would require shunting of drill cuttings and drilling muds in prime spawning areas and we have specified the most important tracts. Section B would require that drill cuttings and muds be transported out of tracts important for scalloping and lobstering to predetermined disposal sites.

There are two areas of concern which are not covered by any of the proposed lease stipulations, in either committed or uncommitted form. We recommend the addition of two lease stipulations:

-Proposed Lease Stipulation 9, requiring site specific hazard surveys of the ocean bottom.

-Proposed Lease Stipulation 10, requiring notification of intensive seismic surveys through announcements in the Notice to Mariners.

2.- Biologically Important Areas

Studies by the Bureau of Land Management and others may not yet have located sites which could be biologically sensitive to O.C.S. operations or may contain undeveloped commercial fish or shellfish resources. This stipulation is designed to protect these resource areas.

If the Supervisor, having reason to believe that an area of special biological significance may exist in the lease area, gives the lessee written notice that the lessor is invoking the provisions of this stipulation, the lessee shall, upon receipt of such notice, comply with the following requirements:

Prior to and/or during any drilling activity or the construction or placement of any structure for exploration or development of lease areas including, but not limited to, well drilling and pipeline and platform placement, hereinafter in this stipulation referred to as "operation", the lessee shall conduct site specific surveys, as approved by the Supervisor, to determine the actual existence of an area of special biological significance such as important commercial fishing and spawning grounds and habitats important for lobstering and scalloping that may be adversely affected by any lease operation. If such surveys indicate the existence of such an area, the lessee shall:

(1) relocate the site of such operation so as not to adversely affect the area identified; or (2) establish, to the satisfaction of the Supervisor and the states, on the basis of the site specific survey, either that such operation will not adversely affect the area identified or that the potential biological resource suggested by the occurrence of the anomaly does not exist.

All data obtained in the course of any biological surveys conducted pursuant to the provisions hereof shall be submitted to the Supervisor with any application by the lessee for drilling or other activity with a copy to the Manager, New York O.C.S. Office and the states. Upon consultation with the states, should the Supervisor determine, contrary to the contentions of the lessee, that the existence of a biological resource which may be adversely affected by such operation is sufficiently established to warrant protection, the lessee shall take no action that may result in any adverse effect on such resource until the Supervisor has given the lessee directions with respect to the resource. The Supervisor specifically reserves the right to impose additional mitigating measures to protect biologically important areas.

The lessee agrees that, if any site, structure, or object of biological significance should be discovered during the conduct of any operations on the leased area, he shall report such findings to the Supervisor and the states, and make every reasonable effort to preserve and protect the resource from damage until the Supervisor has given the lessee directions with respect to the resource.

Secretarial Order 2974 requires that the Bureau of Land Management and the Fish and Wildlife Service design all survey requirements necessary to implement lease stipulations concerning biological resources. The survey requirements would appear as a Notice to Lessees issued by the Supervisor. (Underlining represents recommendations.)

Discussion

The draft E.I.S. proposes Lease Stipulation 2 which enables the Supervisor to require the lessee to conduct site specific surveys of biologically sensitive areas.

As a result of the survey, the lessee shall either relocate the site of operation or establish that the operations will not adversely affect the area or the potential biological resources.

Governor Dukakis' June 2nd submission recommends that this stipulation apply to all leases sold on Georges Bank. An additional recommendation is that the stipulation specify commercial fishing and spawning grounds as acutely biologically sensitive areas on Georges Bank. Benthic species such as lobster and scallops are also biologically sensitive species particularly susceptible to the placement of structures, drilling and waste disposal, and should be given special attention. Biological communities are dynamic, so that tracts must be continuously monitored - even after drilling and construction begin - to detect changes in biological sensitivity.

In addition, because of the importance of commercial fisheries to the states' economies, the Supervisor should provide the special studies and data to the states for a 30-day review period and consult with them before giving the lessee directions on how to proceed.

Finally, we request some clarification on the term "has given the lessee directions with respect to the resource". Presumably, this means that the Supervisor can impose relevant mitigating actions, such as the special disposal of wastes and drilling cuttings.

3.- Placement of Structures

Structures for drilling or production, including pipelines and subsea systems, shall be kept to the minimum necessary for proper exploration, development, and production, and to the greatest extent consistent therewith, shall be placed so as not to interfere unnecessarily with other significant uses of the Outer Continental Shelf, including commercial fishing.

Two means will be used to accomplish this end. First, no structures for drilling or production, including pipelines and subsea systems, may be placed on the Outer Continental Shelf until the Supervisor has determined that the structure is necessary for the proper exploration, development, or production of the lease area and that no reasonable alternative placement would cause less interference with other significant uses of the Outer Continental Shelf, including commercial fishing. Second, unitization shall be required of all separately owned leases which overlie a single field or group of fields. The lessee's exploratory and development plans, filed under 30 CFR 250.34, shall identify the anticipated placement and grouping of necessary structures including pipelines and subsea production systems, showing how such placement and grouping will have the minimum practicable effect on other significant uses of the Outer Continental Shelf, including commercial fishing.

Discussion

While the stipulation as proposed by BLM will assure that structures are placed to minimize interference with commercial fishing and other uses, it does not assure that the number of structures will be kept to a minimum. Therefore, consistent with Governor Dukakis' June 2nd submission, a requirement for unitization has been added. The U.S. Geological Survey explains unitization as follows:

Formation of a unit permits all leases within the unit to be explored and developed by a single operator using one plan of operations, rather than individually by a number of operators with varying plans of operation. Exploration and development of the entire unit with a single plan of operations increases ultimate recovery of oil and gas and at the same time eliminates wasteful operations and duplicate facilities. Thus, the purposes of unitization are to

minimize potential hazards and maximize production.¹

The intent of this stipulation is to require unitization, where possible, for all drilling, production, processing and transportation facilities during the development and production phases.

1

Final Environmental Statement, Oil and Gas Development in the Santa Barbara Channel

4.- Transport of Oil and Gas

If feasible pipeline rights-of-way can be determined and obtained, and if laying such pipelines is technically and economically feasible, no crude oil production will be transported by surface vessel from offshore production sites to adjacent onshore facilities except in case of emergency. Determinations as to emergency conditions and the technical and economic feasibility of pipeline laying will be made by the Supervisor.

Construction activities related to pipeline laying and burial will be timed so as not to coincide with peak spawning times and locations. Barges will not be used for surface transportation except in emergency situations where the Supervisor determines that the use of no other vessels is feasible.

The lessor specifically reserves the right to require that any pipeline to be used for transportation production from this lease to shore be placed in certain designated areas or corridors. Prior to designating pipeline areas or corridors, the lessor shall submit the proposal to the concerned states for a sixty day review and comment period. The lessor shall accept such recommendations as the states may make unless they are not technologically feasible or not in the national interest.

Wherever technologically feasible, all pipelines, including both flow lines and gathering lines for oil and gas, shall be buried to a depth suitable for adequate protection from water currents, migrating sand waves, storm scouring, fisheries trawling gear, anchor dragging, and other uses and environmental factors as determined by the Department of Interior permitting agency on a case by case basis, but in no event to a depth of less than 6 feet.

To insure that burial is complete, trenches shall be mechanically refilled. Shrouding shall be used in cases where pipeline burial is not technologically feasible and where valves or other protrusions project from the lines. Shrouding shall be designed to withstand the impact of commercial fishing gear used on Georges Bank.

The U.S. Geological Survey shall undertake inspection and surveillance programs to ensure that pipelines remain buried. Such a program shall include, at a minimum, monthly inspection by side scan sonar for the first six months after installation, and quarterly thereafter. All pipelines which become exposed shall be reburied at the expense of the lessee.

Pipelines, gathering lines, and flow lines will be mapped on nautical charts, and the charts will be distributed to states and interested parties.

Discussion

The suggested modifications to this lease stipulation would ensure that:

- 1.- Construction activity would not adversely affect the spawning of species of commercial importance.

The turbidity and sediment disruption associated with the laying and burial of a pipeline through a spawning ground could have serious impacts on the viability of a year class for species with known specific spawning grounds. Planning pipeline operations so as to avoid times and locations of spawning would eliminate this hazard.

- 2.- States' concerns would receive fair consideration in the siting of pipelines.

Since this state has legitimate concerns over the productivity and management of the resources of Georges Bank, it is important that we have a voice in the siting of pipelines, even if they are not in state waters.

- 3.- Pipelines would be buried and remain buried to a depth sufficient to protect them from damage and thereby avoiding potentially large oil spills as well as interference with trawling activities.

Since exposed pipelines present a hazard to trawling operations and increase the likelihood of environmental damage from oil spills, pipeline burial has been recommended. Cognizant of the active sediment transport and the strength of bottom currents on Georges Bank, and also of the experience in the North Sea, provisions have been made for

inspection and reburial, if necessary.

4.- All vessel operators on Georges Bank would be cognizant of the location of pipelines.

5.- The states would have a voice in determining whether or not tankers or pipelines are used to bring crude to shore.

7.- Service and Supply Boat Movements

Unless imminent danger to life and/or property exists, all surface vessels or ships utilized by lessees shall travel between onshore service bases and offshore exploration development, and/or production facilities using corridors designated by the Supervisor. The Supervisor making his determination shall consult with both affected fishermen and operators and shall seek to designate corridors which avoid areas of high fishing activity.

Discussion

The stipulation on vessel movement as proposed by BLM does not address Massachusetts concerns as specified in Governor Dukakis' June 2nd submission for two reasons. First, the traffic corridors would apply only within the boundaries of the leased tract and second, the stipulation would apply only to eleven tracts. In the June 2nd submission, Massachusetts recommended the establishment of traffic lanes for service and supply vessels throughout the Lease Sale area to minimize:

- (a) Interference with slower moving commercial fishing vessels;
- (b) Interference with vessels actually engaged in commercial fishing operations;
- (c) Possibilities of accidents with wooden hulled fishing boats (which constitute a large part of the N.E. fishing fleet) which present poor radar targets;
- (d) Possible interference with areas of heavy recreational boating and fishing, such as the channels between the Elizabeth Islands.

The proposed changes in the Lease Stipulation were designed to provide for the management of service vessel traffic between supply bases and offshore drilling rigs and platforms. This may require designating several vessel traffic corridors over the whole of Georges Bank starting from various supply bases and going to the major groups of tracts.

This stipulation should apply to all leases sold.

8A.- Shunting of Drill Cuttings and Reinjection of Wastes

In order to protect prime spawning grounds, shunting of drill cuttings and drilling muds will be required. This stipulation applies to the following tracts in NK 19-12, Nos. 63, 64, 65, 107, 108, 109, 322, 323, 324, 361, 365, 366, 367, 401, 402, 403, 409, 410, 492, 493, 536.

Drill cuttings and drilling muds must be disposed of by shunting the material beneath the ocean surface through a downpipe. Termination depth of the downpipe beneath sea level will be determined by the Supervisor on a case by case basis. Produced formation water must be reinjected into sub surface formations in accordance with OCS Operating Orders.

Determinations of the downpipe depth will be made by the Supervisor on a case by case basis, though recommendations will come primarily from the Bureau of Land Management and the Fish and Wildlife Service; Secretarial Order 2974 requires B.L.M. and the Fish and Wildlife Service to determine the implementation methods in stipulations designed to protect biological resources.

These procedures will be required pending results of the Bureau of Land Management's environmental studies program, and discontinued only with the written permission of the Supervisor.

Discussion:

This stipulation differs from the one proposed by B.L.M. in that it does not require barging of drill cuttings and mud, and it applies only to prime spawning grounds. Shunting of wastes below the ocean surface would protect spawns and larvae (which float on the surface) from the harmful effects of drill mud and cuttings.

8B.- Transport of Drill Cuttings and Drill Mud

In order to protect valuable lobster and scallop grounds, the following lease stipulations will be utilized for tracts: NK 19-9, 899, 900, 942, 943, 944, 974, 975, 976, 980, 981, 986, 987; NK-19-10, 614, 615, 616; NK 19-11, 286, 756, 800, 801; NK-19-12, 6, 7, 8, 12, 13, 14, 15, 19, 46, 47, 48, 49, 109, 110, 111, 112, 135, 136, 137, 138, 142, 143, 177, 397, 398, 399, 441, 442, 443, 537.

Drill muds and drill cuttings shall be transported to preselected disposal sites approved by the Area Supervisor, USGS, and the Environmental Protection Agency.

These procedures will be required pending results of the Bureau of Land Management's environmental studies program, and discontinued only with the written permission of the Supervisor.

Discussion:

Through this requirement, additional protection will be afforded to lobster and scallop grounds. Since these organisms are essentially immobile, particularly in juvenile stages, and since these are especially high value species, additional protection is warranted. Barging of drill cuttings and mud would prevent smothering of these organisms as well as the destruction of their habitat.

9.- Hazard Survey

Prior to the commencement of drilling operations, the lessee shall conduct a site specific hazard survey of the ocean bottom and sub-bottom in order to identify any geological or man-made hazards that could threaten the integrity of platforms, structure stability or the safety of drilling operations. The operator shall conduct shallow sub-bottom high resolution seismic profiling (3.5 KHz) with a sufficiently close profile line spacing to delineate any shallow geological hazards, such as shallow fault displacement. Prior to the use of jack up drilling rigs, and prior to the installation of platforms, subsea completion systems and pipelines, the operator shall collect bore hole samples from the area of proposed operations and analyze them for light hydrocarbon concentrations and geotechnical properties.

Discussion

Preliminary studies performed by the U.S. Geological Survey in 1976 during the Atlantic Margin Coring Project have shown that hazards such as unstable sediments, faults, sand waves, and high levels of light hydrocarbons exist in many parts of Georges Bank. In addition, the geology of the shallow sub-bottom changes dramatically over short distances in this area.¹ The above mentioned geological hazards can threaten the stability of platforms and structures as well as the safety of drilling operations.

The above lease stipulation -- which is a new one recommended by Massachusetts -- will insure to the maximum extent possible, that the operator is aware of and may avoid any shallow geologic hazards.

¹ Ralph Lewis, U.S. Geological Survey, Woods Hole, Massachusetts. Personal communication.

10.- Intensive Seismic Surveying

The leasee shall make known dates and patterns of intensive seismic work to the Supervisor and to fishermen through the Coast Guard's Notice to Mariners and radio broadcasts, so that:

- a) dates of surveying may be coordinated with particular fish runs to ensure that an area will not be removed from fishing at its prime yield time; and
- b) fishermen may avoid the area during surveying.

The Supervisor may require that intensive seismic surveying activity be coordinated among leaseholders to reduce the number of boats in operation at one time in a particular area.

Discussion:

As noted in the June 2nd submission, Massachusetts is concerned that conflicts between fishing and oil activities be minimized, and is recommending a new stipulation. In the past, the lack of coordination and cooperation between the two industries has resulted in difficulties for both. The opportunities are great for conflict between slow moving limited maneuverability trawling vessels and seismic vessels which must follow predetermined paths towing strings of electronic gear miles long.

The intent of this stipulation is to notify fishermen of seismic activities so they may avoid the area and to ensure that seismic surveying does not prevent fishermen from harvesting particularly productive fish runs.

4. PRELIMINARY RECOMMENDATIONS ON OCS
OPERATING ORDERS FOR THE
NORTH ATLANTIC

The U.S. Geological Survey has, in the Federal Register and in the Draft EIS, proposed draft OCS operating orders for the North Atlantic. Realizing that these orders are to apply to this lease sale and any future sales, we were especially concerned that they receive a thorough review.

We requested and received comments from the following agencies and organizations:

Lt. Governor's Office
Executive Office of Environmental Affairs
Office of State Planning
Energy Policy Office
Department of Commerce and Development
State Geologist
Conservation Law Foundation
New England Fisheries Steering Committee
National Coalition for Marine Conservation, Inc.

On October 29, 1976, the Secretary of Environmental Affairs submitted preliminary comments to the USGS on the Draft OCS Operating Orders for the North Atlantic, and requested a meeting to discuss them. The comments were based on a desire to minimize environmental damage, minimize conflicts with the fishing industry, and provide for greater safety in operations.

Specific comments on OCS orders Nos. 1, 2, 3, and 7 follow.

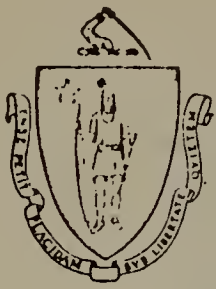
There are four additional concerns that have not been addressed by the proposed operating orders.

First, a clarification is required as to whether OCS orders issued after the lease sale are legally enforceable. Recent court cases in California would seem to suggest that they are not.

Second, the state would like to have the opportunity to comment on all major departures from Operating Orders, major departures being those which require approval of the Chief of Conservation Division.

Third, that safety zones be established around all platforms and drilling vessels for the protection of fishing, oil, and environmental interests; the exact boundaries of such safety zones should be established in consultation with the commercial fishing industry.

Fourth, that before any drilling vessels or structures are moved into or out of the Georges Bank area, operators should contact the Intelligence Division of the 1st Coast Guard District to determine the locations of any fixed fishing gear (lobster and crab pots, etc.), so that these areas will be avoided. In addition, that times, routes and locations of all drilling vessel or structure movements be reported to the Coast Guard for inclusion in the Notice to Mariners, so that fishermen may avoid that area.



COASTAL ZONE
MANAGEMENT

The Commonwealth of Massachusetts

Executive Office of Environmental Affairs

100 Cambridge Street

Boston, Massachusetts 02202

MASSACHUSETTS PRELIMINARY COMMENTS ON DRAFT OPERATING ORDERS FOR THE NORTH ATLANTIC

OCS ORDER NO. 1 - Identification of wells, platforms, structures and subsea objects.

This order provides regulations for identifying each platform, structure and well so that they may be distinguishable. It also requires navigational markings for subsea objects which present a hazard to navigation or commercial fishing.

Concern: Georges Bank is an area heavily trafficked by both commercial shipping vessels and trawling operations and is reputed for its severe storms and frequent fog.^{1/} The concern is that all platforms and structures have adequate lighting and sounding devices to prevent accidental vessel/structure collisions. Such collisions could result in loss of life, extensive damage to both vessel and structure, and could cause a massive oil spill.

Recommendation: It is recommended that the USGS work with the U.S. Coast Guard to require all offshore drilling vessels and structures to have adequate lighting and sounding devices. The provisions of the present Coast Guard regulations (33CFR67.20) for fixed structures in "Class A" areas are likely the most appropriate for Georges Bank. These regulations require lights visible for five miles and a fog signal with a range of two miles. We request USGS should take whatever action is necessary to assure that all vessels or structures engaged in drilling operations, whether fixed or non-fixed, have lighting and sounding devices.

Concern: The proliferation of subsea objects (temporarily abandoned wells, subsea completions and bottom debris dumped by accident) presents a hazard to deployment of commercial fishing operations and navigation. Order 1, Section 4 is vague about the definition of sub-sea objects and makes no provision for notification about their location.

Recommendation: 1. Amend Section 4, "Identification of Subsea Objects.." to read: All subsea objects resulting from lease operations, including temporarily abandoned wells, subsea well completions, and bottom debris dumped by accident or jettisoned in bad weather and presenting a hazard to navigation and deployment of commercial fishing operations should be reported immediately to the Coast Guard for inclusion in the Notice of Mariners. The report should include a description of the object and the location by LORAN bearings. In addition temporarily abandoned wells, subsea completion units and bottom debris hazardous to trawling, scalloping and lobstering will be identified by navigational markings which include a radar reflector and light. Such identification shall be in accordance with a design approved by the Supervisor and shall not be inconsistent" (underlined portions constitute recommendations)

O.C.S. ORDER No. 2 - Drilling Procedures

This order sets forth the types of equipment to be used for drilling operations, the method of operations, requirements for personnel training, testing procedures and regulations for conducting critical operations.

Section 1: Drilling Platforms and Vessels

Concern (a): Platforms and structures should be designed to withstand the worst anticipated environmental and geologic conditions on Georges Bank. This performance standard would prevent, to the maximum extent possible, any unnecessary loss of life or environmental pollution. The definition of "worst anticipated environmental and geologic conditions" should be specified by the U.S. Geological Survey from the outset, and the actual conditions monitored over the life of the field.

Recommendations (a): The U.S. Geological Survey should revise Section 1, "Drilling Platforms and Vessels" to:

- (1) include in this order a description of the worst anticipated oceanographic, meteorologic, and seismic conditions. This list could be developed from the National Oceanic and Atmospheric Administration's Oceanographic Data Gathering Program, from the Bureau of Land Management's Environmental Baseline Studies, and other pertinent sources. It should be noted that the United Kingdom's Department of Energy (the regulatory authority for offshore drilling) has prepared such a list for operations in the North Sea,² and, as better data have been collected, the worst anticipated environmental conditions have been steadily revised upward;³
- (2) make maximum use of the environmental data collection currently required under Section 1.c., the U.S.G.S. should standardize the types of data to be collected, the method of collection and the format for reporting. The categories of data required are broad: within the meteorological category, minimum windspeed and direction, air temperature and pressure should be specified; among oceanographic data, wave height and period, current velocity and direction should be included. This information is essential for revising and updating the list referred to above for the design and construction of permanent platforms, for assessing the adequacy of pollution cleanup equipment, and for proving the reliability of present offshore technology;
- (3) require that all mobile drilling platforms and vessels on Georges Bank have a "Certificate of Fitness" to withstand the above mentioned environmental conditions. The U.S.G.S. could issue this certificate by requiring compliance with certain performance standards for design and construction. "Recommended Practice for Planning, Designing and Constructing Fixed Offshore Platforms", published by the American Petroleum Institute (A.P.I.) is an example of performance standards which could be modified for mobile drilling platforms and vessels.

Concern (b): Preliminary studies have shown that hazards such as unstable sediments, faults, sand waves, and high pressure gas pockets exist in many parts of Georges Bank.⁴ Operators should know where these hazards exist and how they might change during oil and gas activities, so that platforms and structures are not placed inappropriately.

Recommendation (b): As a prerequisite to the commencement of drilling operations on each lease, the operator should be required to conduct a hazard survey of the ocean bottom and sub-bottom to detect and identify both geologic and man-made hazards that would threaten drilling platform or structure stability or the safety of drilling operations. The hazard survey study should be provided to the U.S.G.S. for their review and use in evaluating the adequacy of operators' proposed actions. Guidelines for the conduct of this survey should be issued by the U.S.G.S. and may be modeled after the Notice to Lessees in the Pacific area, "Minimum Requirements for Shallow Drilling Hazards Survey and Cultural Resource Survey for O.C.S. Exploratory Drilling".

Section 8: Critical Operations and Curtailment Plans

Concern (a): The subsurface safety device is an essential piece of equipment for the prevention of pollution, which operators may remove at will for up to two weeks at a time. The failure to have this device in operation was responsible for one of the largest offshore oil related spills in the United States.⁵ The removal of this device should be subject to special terms and conditions.

Recommendation (a): The removal of a subsurface safety device be added to the list of critical operations (Part A of Section 8).

Concern (b): "Critical operations" pose a greater threat to the natural resources of Georges Bank and to the safety of workers than every day operations. The conduct of these critical operations must be sensitive to those circumstances which might magnify impacts, if an accident were to occur. Section 8 requires that such circumstances be specified, but does not mention several categories of concern to Massachusetts residents.

Recommendation (b): The following considerations should be added to the list of factors in developing curtailment plans: spawning times and locations on Georges Bank, migratory patterns of fish and fowl, seasonal trajectory patterns for oil spills, and the existence of endangered species or areas of special biological significance.

O.C.S. ORDER No. 3 - Plugging and Abandonment of Wells

This order sets minimum standards for both permanent and temporary abandonment of wells and includes a section specifically on clearing the sea floor after operations are terminated.

Concern (a): Temporarily abandoned wells present a hazard to commercial fishing operations, thereby discouraging fishing in the immediate area. This circumstance may not be significant if it persists for a matter of months, but may be of concern over a period of years. There is no clear definition in this order of temporary abandonment, and a further explanation is important.

Recommendation (a): A further clarification of what constitutes permanent abandonment and what constitutes temporary abandonment should be added (e.g. is there a time limit, special conditions?).

Section 1.I

Concern (a): Sand waves of 40-50 feet are common on large parts of Georges Bank.⁶ The migration of these waves could easily expose formerly buried well casing, and result in significant damage to nets and loss of income to the commercial fishermen.

Recommendation (a): This section should be revised to require removal of well casing to at least 60 feet below the ocean floor, in areas where sand waves have been identified as hazardous to oil and gas operations in Order 2, Section 1.

O.C.S. ORDER No. 7 - Pollution and Waste Disposal

This order regulates the disposal of drilling mud, drilling cuttings and solid waste. It also requires operators to train personnel in pollution prevention, to file pollution reports, to have access to oil spill pollution control equipment and to develop an oil spill contingency plan.

Section 1: Pollution Prevention

Concern (a): Since the health of the marine environment is essential to our commercial fishing and recreation industries, and since this order deals with some of the major environmental impacts of O.C.S. development, the concern is that the disposal of all gaseous, liquid and solid wastes not adversely affect the productivity of the marine environment or disrupt commercial fishing operations.

Recommendations (A):

- (1) As there is considerable confusion, even among federal agencies, as to the regulatory authority for pollution and waste disposal, the U.S.G.S. should incorporate into this order specific citations of authority for the regulation of solid and liquid waste disposal from both fixed and non-fixed platforms and structures. If there are gaps or omissions in this authority, we request the U.S.G.S. to include in this order provisions for the disposal of solid and liquid wastes from all O.C.S. operations in an environmentally sound manner.
- (2) As commercial fishing is one of the most important uses of Georges Bank, it should be specifically mentioned as one of the uses not to be adversely affected by waste disposal.

This section should be clarified to state that all solid and liquid wastes shall be disposed of only in accordance with all applicable federal regulations.

- (3) Section 1.A - All drilling mud and drilling cuttings should be shunted through a pipe discharging near the ocean floor to reduce turbidity and minimize the areal extent of the adverse environmental impact resulting from their disposal.
- (4) Section 1.A.(3) - Curbs and Gutters: Since this section is based on the provisions of Operating Order No. 8 which has not been issued, it is impossible to evaluate its adequacy.
- (5) Section 1.B. - Solid Waste Disposal: This section should be reworded to expressly prohibit the dumping of equipment or other debris from supply vessels, platforms, and exploratory rigs.
- (6) Disposal of gas into the ocean by means of "bubbling off" should be prohibited so that toxic substances are not thereby released.
- (7) All materials which are to be transported offshore and which could be a hazard to commercial fishing operations if jettisoned, should be indelibly marked with the name of both lessee and supply boat operator, thereby establishing legal liability if claims for damage are brought by fishermen.

Section 2: Personnel, Inspections and Reports

Concern (b): According to the USGS Work Group on OCS Safety and Pollution,⁷ human error is a major factor in accidents resulting in oil pollution. This problem has been addressed in Gulf of Mexico Operating Order 8 which requires that personnel be trained in the importance of pollution prevention and in the methods of pollution, disposal, and equipment maintenance. A concern is that similar provisions have not been included in North Atlantic Operating Orders.

The USGS Work Group on OCS Safety and Pollution has also raised concerns about the required contents of pollution inspection reports. An additional concern is the availability and timing of the reports for the states which need the information in monitoring and clean-up programs.

Recommendations (B): The USGS should revise portions of Section 2 as follows:

- (1) Section 2A: This section should be updated to incorporate the provisions of the recently revised Gulf of Mexico OCS Order No. 8.⁸ This would require operators to train all personnel engaged in installing, inspecting, testing and routinely maintaining well control, safety and pollution control equipment in a program which complies with API RP T-2 "Qualifications Program for Offshore Production Personnel Who Work With Anti-Pollution Safety Devices."

It would also require an employee orientation and motivation program in compliance with the provisions of: API RP T-1 "Orientation Program for Personnel Going Offshore the First Time" and API Bulletin T-5 "Employee Motivation Programs for Safety and Prevention of Pollution in Offshore Operations."

A further provision, geared specifically to Georges Bank, should be required in the interest of minimizing conflicts between the fishing and oil industries.⁹ A training program should be established for the education of all offshore personnel and all subcontractor personnel involved in supply boat operations in the avoidance of potential conflicts with the fishing industry. Many of the fishing-oil conflicts are unintentional and may be avoided if the requirements and methods of operation of each industry are mutually understood. Emphasis should be placed on the problems caused by the dumping of equipment or other debris in trawling grounds, by fast moving supply boats conflicting with slow moving, limited maneuverability vessels engaged in trawling and by the placement of rigs and platforms in traditional fishing runs.

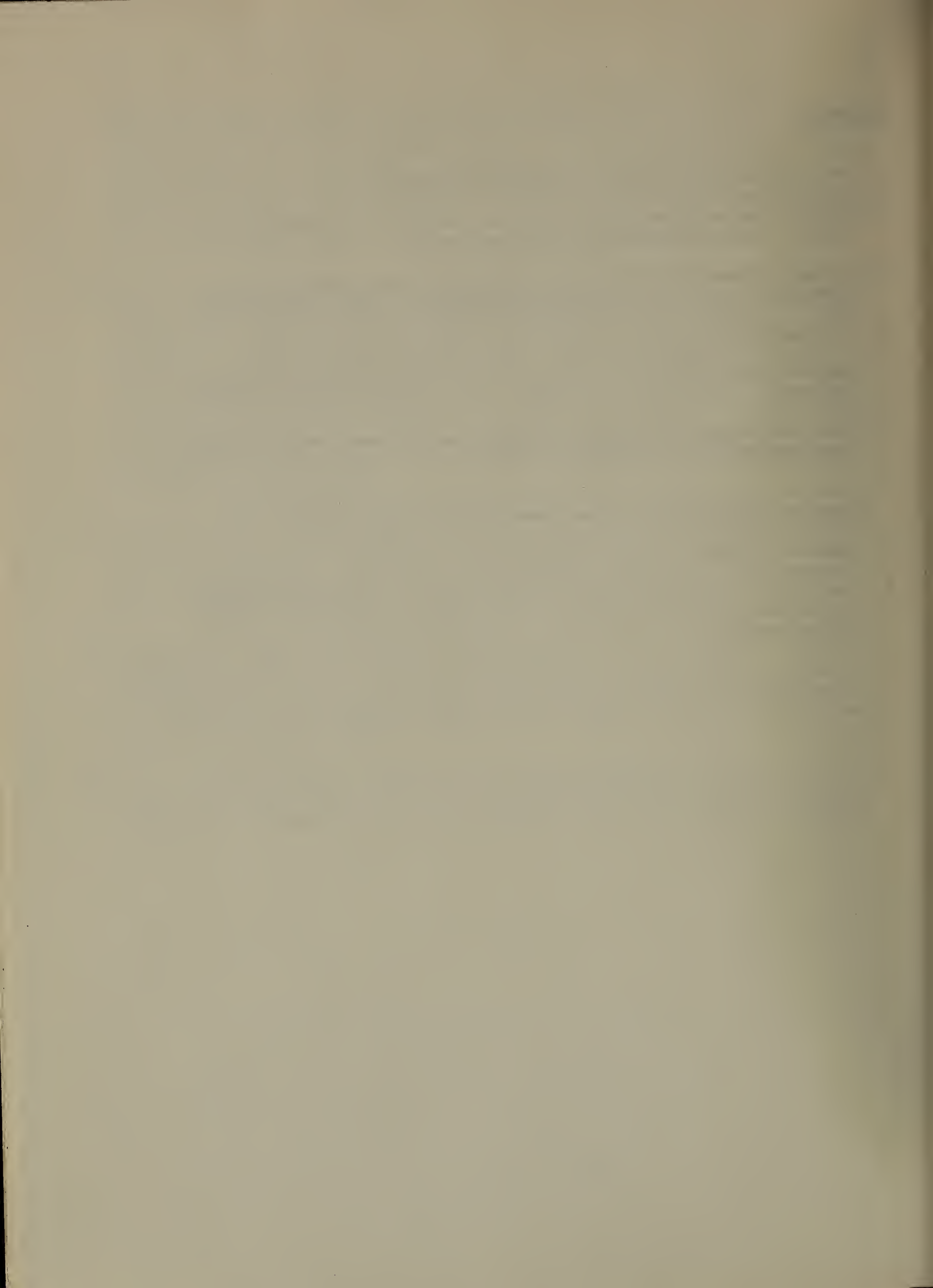
- (2) Section 2B: This section should explicitly state the purposes of facilities inspection (eg. functioning pollution control equipment, minor leaks, oil spills) and should require that all personnel doing the inspecting be properly trained.
- (3) Section 2B (2): To assure that unattended facilities are inspected, the supervisor shall prescribe the frequency of inspection.
- (4) Section 2C: Pollution reports should be expanded to include detailed descriptions of the cause of the spill, action taken to remove it, and measures taken to prevent it's recurrence. This request concurs with the recommendations of the OCS Work Group on Safety and Pollution Control.

The Commonwealth requests oral and written notification of all spills. In particular, The Secretary of Environmental Affairs would like to be notified of all spills less than 15 barrels within 12 hours and immediately for all spills larger than 15 barrels. The Division of Water Pollution Control would use the information to notify those areas along the Massachusetts coast potentially impacted by major spills, and if necessary deploy the Commonwealth's oil spill contingency plan. The Coastal Zone Program can use the information to analyze impacts that oil spills might have in nearshore areas.

- (5) Section 3A: As presently written this section does not assure adequately and timely response to oil spills. The USGS should specify that best available technology be used and set performance standards for pollution control equipment such as ability to function under certain wave heights and current strengths, to have a minimum response time, and to have adequate capacity to clean up both small and large spills. Because of the distance from shore of the proposed tracts, response from shorebased cleanup equipment will be impractical and therefore unlikely, except for large spills. The USGS should therefore require that sufficient equipment to clean up at least minor spills be available at one or more offshore locations. Prompt response is crucial to adequate cleanup efforts.
- (6) Since the use of sinking agents is largely a cosmetic approach to oil cleanup and since long term toxic effects may result from the incorporation of oil into bottom sediments, the use of sinking agents should be prohibited. All other chemical agents to be used on Georges Bank should have Environmental Protection Agency Approval.
- (7) Section 3B: Given that adjacent states, the Environmental Protection Agency, and the U.S. Coast Guard all have responsibility for oil spills in their respective jurisdictions, they should be allowed the opportunity to comment on the adequacy of contingency plans before the Supervisor issues approval. The Secretary of Environmental Affairs would conduct the review of contingency plans for the Commonwealth.
- (8) As the onshore disposal of oil and oil wastes resulting from pollution cleanup efforts is frequently a difficult problem, we would like to see proof of contractual arrangements for onshore disposal included in contingency plans.

FOOTNOTES

1. Draft Environmental Impact Statement, Lease Sale # 42.
2. United Kingdom, Department of Energy, "Guidance on the Design and Construction of Offshore Installations, 1974".
3. E.T.A. Offshore Seminars, Inc., Offshore Drilling, Completion and Production, page 400, Petroleum Publishing Co., Tulsa, Okla. 1976.
4. U.S. Geological Survey, Atlantic Margin Coring Project, 1976.
5. February 1970, Block 41, Main Pass Field, Platform Charlie (Chevron Oil Co.).
6. From conversations with Joseph Sinnott, Massachusetts State Geologist and Ralph Lewis, U.S. Geological Survey.
7. U.S. Geological Survey, Work Group on O.C.S. Safety and Pollution Control, Supplement No. 1, May 1974, Recommendation No. 9.
8. Federal Register, Volume 41, Number 174, page 37622.
9. Woods Hole Oceanographic Institution, Effects on Commercial Fishing of Petroleum Development Off the Northeastern United States, 1976, pages 17-19.



5. OVERVIEW OF TECHNICAL ANALYSIS

The focus of our technical comments on the draft E.I.S. will be four areas of major concern: commercial fisheries, onshore impacts, oil spills and other important considerations.

O.C.S. Lease Sale # 42 is distinguished from all other existing and proposed Outer Continental Shelf lease areas because of its unusually high rates of fishery production. The Georges Bank is one of the world's most productive fishing grounds. In view of the recent enactment of the Fishery Conservation and Management Act of 1976 extending United States jurisdiction to 200 miles, we are committed to maintaining and improving our valuable, renewable fishery resources.

We are eager to utilize the final E.I.S. to evaluate the onshore social and economic impacts of offshore oil operations. In order to plan for the additional infrastructure needs of individual cities and towns, it is essential that we have projected economic information that is consistent with the size of the areas which will bear these impacts.

With regard to oil spills, it is obvious that we are primarily concerned with the potential damage to the marine environment and our valuable recreational resources.

OVERVIEW OF COMMERCIAL FISHERIES

Taken as a whole, the Georges Bank draft E.I.S. provides a fairly limited assessment of the commercial fishing industry. It is very difficult to correlate the many sections which deal with commercial fisheries to form a clear picture of the possible adverse impacts to the fish industry. The reader is confused by the unnecessary inclusion of many extraneous facts and an extremely cumbersome system of organization.

A major source of confusion are the definitions of the frequently used qualifiers - short term and localized effects. Repeated references to "short term" impacts [such as the probability of vessel collisions (p. 843), and the effect of nearshore oil spills on fish populations (p. 869)] make it difficult to evaluate the impact of these hazards. Although we recognize that precise calculations are not possible, greater detail than "quite detrimental to local populations" is needed to determine the extent of impacts of oil spills on marine organisms (p. 877).

What is needed in order to better evaluate impacts are ranges of the extent which these populations may be destroyed. Similarly the range of years that are intended should be used, instead of nebulous periods such as "short term". This could vary from 1-25 years and have vastly different impacts. These data would enable quantitative worst possible case calculations.

Specific comments about commercial fisheries address five subject areas: (1) the increase in commercial fishery activities as a result of the 200-mile extended jurisdiction; (2) the need for an integrated ecosystem approach to the discussion of all fishery impacts; (3) the area that will be pre-empted to fishing by oil industry activity; (4) the effect of oil spills on fish stocks; and (5) the potential vessel traffic conflicts.

The United States' 200-mile fishery resources zone will become effective in March, 1977. The draft E.I.S. does not provide any projections of the effects of increased domestic fish landings on the fish industry as a result of extended jurisdiction. It is anticipated that fishery management programs resulting from the Fisheries Conservation and Management Act of 1976 will increase the gross size and value of domestic fish landings and also the number of fishing boats and fishery related employment. We feel that the Bureau of Land Management should incorporate into the final E.I.S. recent data on increased landings, employment, fishing vessels, and processing. The information can be obtained from a draft report prepared by the University of Rhode Island for the New England Regional Commission, Fishing and Petroleum Interactions on Georges Bank (November, 1976). Other available sources about fisheries populations, including total allowable catches, are a series of Preliminary Management Plans which have been developed by the National Marine Fisheries Service, and published in September, 1976. These Preliminary Management Plans cover Atlantic Herring, Mackerel, Short- and Long-finned Squid, Red and Silver Hake, and Other Finfish.

The draft E.I.S. fails to address marine organisms from an ecosystem point of view. The breaking down of ecosystems into subgroups (such as phytoplankton and zooplankton) prevents any sense of trophic relationships and interactions. Individual descriptions of marine organisms are well prepared, but there is little discussion of how a severe loss to one biological community would impact other communities. An example of such a relationship is squid, which is cited by Dr. Virgil Norton in his review of the draft E.I.S. Squid make up an important part of the bio-mass and the general ecosystem of the area. The draft E.I.S. does not consider squid in any section. This could be especially significant if squid are vulnerable to oil spills, since the loss of squid would have significant adverse impact on more commercially important species.

Another example of the interrelationship of marine organisms is the commensal relationship of red hake and sea scallops. According to the N.M.F.S. draft E.I.S./Preliminary Fishery Management Plan for Red Hake (page 12), "Juveniles during the first year of life have been observed within the mantle cavity of the sea scallop (Placopeten magellanicus)...". The final E.I.S. should describe this relationship in both the Description of Environment section and the Impact on the Environment section.

The draft E.I.S. states that "50% of the dredging grounds for scallops would appear to be potentially affected by the installation of rigs or platforms within leased tracts" (page 856). Drill cuttings and drill muds could have severe impacts on sea scallops and also on red hake.

Although the impacts of oil spills to specific marine organisms are discussed, they are difficult to evaluate because there is no synthesis and meaning given to summary statements of impacts. In many of the sections on impacts of oil spills, one line, unqualified statements appear.

"Dispersants may result in a marked reduction of productivity" (p. 747);
"If a spill should occur, ... high mortalities can be expected" (p. 777);
and "The initial damage caused by large crude oil spills on the intertidal fauna associated with the North Atlantic Area can be severe" (p. 783). If these statements are to have any meaning and utility for the analysis of impacts, qualification and correlation with possible losses to commercial fish catches are necessary.

A shortcoming of the oil spill section is that it does not put enough emphasis on the impacts on fish eggs and what ramifications these impacts will have on the food chains, and as a result, on the totality of commercial fisheries. The draft E.I.S. states that "Fish eggs and larvae would be killed by exposure to the oil film at or near the surface" (p. 804). However, the quantitative and cumulative effects of these impacts on commercial fisheries are not explained.

Other potentially severe impacts which could result from oil spills are tainting of fish and shellfish, the effects of a continued low level of hydrocarbons in the environment and the possible impacts of heavy metals and trace elements. The draft E.I.S. states that "The marketability of commercial species of fish and shellfish may be reduced because of tainting from nearshore oil spills" (p. 869). The draft E.I.S. states that no conclusive evidence is available on sublethal effects of hydrocarbons. It is also stated that "characteristics of heavy metals favor their magnification in the food web", but that data are inconclusive as to the possible impacts. Further analysis of these three issues is needed to determine the probability and potential extent of fish losses.

Another specific category in need of more detailed discussion are the potential harbor conflicts between the fishing industry and the oil industry. The draft E.I.S. does not accurately present the potential traffic conflicts between platform service boats and fishing boats. For the development phase the Bureau of Land Management predicts approximately 30 vessels (p. 871) to be in use from different ports. According to figures based on the R.A.L.I. Program information of the New England River Basins Commission we have calculated 60 service boats in use from this lease sale during the exploration and overlapping development phase. Even with their low estimation, B.L.M. expects that "there will be a negative impact on ship traffic which will be short term and disruptive in nature" (p. 843). Mitigating measures are needed to minimize these harbor conflicts.

Also, the draft E.I.S. fails to address the conflicts of vessel traffic in shipping lanes and O.C.S. activity. There exists a collision potential between vessels and also with platforms. "At the present time there is no legal basis for the restriction of rigs or platforms from recommended traffic separation zones ... although permits may be denied based on Coast Guard request or recommendation" (p. 845). Forty-seven tracts lie within or immediately adjacent to traffic lanes (p. 846). The amount of vessel traffic and collision potential must be discussed in a more quantitative manner. The final E.I.S. should include more precise figures on the risks of vessel collisions and collisions with offshore structures. Basic to these calculations are figures on vessel traffic, and we have identified two possible sources. First, the U.S. Coast Guard operates the AMVERS Center which monitors the location of participating merchant vessels at all times. More information is available from:

Lt. Fowler
AMVERS Center
Governors Island
New York, N.Y. 10004

A second source of vessel traffic movements is satellite photography. The Corps of Engineers photographs with a resolution of 200 feet which show vessels on Georges Bank and their wakes are also available.

Another harbor conflict that is completely neglected are secondary conflicts for the use of maintenance and repair facilities. Increased shipping traffic will cause a concomitant increase in demand for dry dock space and diesel repair facilities. The demand for additional repair facilities should be estimated and possible techniques for encouraging these facilities to locate in the needed areas should be investigated.

We do not believe the draft E.I.S. presents the "worst possible case" for the area that will be pre-empted from fishing by oil rigs and unburied pipelines. The draft E.I.S. employs a minimal 150 foot buffer (page 855) for platforms while by international agreement, a 500 m (1650') buffer has been established, although it is not enforced (page 594). In addition to platforms and buffers, other areas that will be pre-empted are those areas between clusters of platforms, above unburied pipelines, tanker loading areas, subsea completion systems, trawler turning radii, and service boat corridors. Assuming these additional structures, the acreage lost to fishing could amount to the following figures in Table 1.

TABLE 1
PRODUCTION¹

	<u>25 platforms</u>			<u>50 platforms</u>		
Individual platforms (1,650 foot buffer)	8.6 square miles			17.2 square miles		
Individual platforms with loading zone (300 ft. buffer around loading zone and pipe)	14.1	"	"	28.2	"	"
Individual platforms with loading zone (1,650 ft. with buffer around complex)	26.8	"	"	53.6	"	"
Clusters similar to Forties Field	62.5	"	"	125.0	"	"

¹ No estimate is made here of the area excluded by major pipelines to shore, subsea completions, or the number of subsea completions that may be placed on Georges Bank. The areas involved, however, could be sizable.

TABLE 2
EXPLORATION ¹

Exploratory Rigs

6 - 10 rigs²

Semisubmersibles

assume 1,500' anchor
lines and 500 m
buffer zone

233 acres/rig

1,400 - 2,330 acres

(U.R.I. draft p. 297)

Unburied Pipelines

300' - 1,650' buffer
(U.R.I. draft p. 298)

73 - 364 acres/mile

- ¹ No estimate is made of the area excluded by subsea completions, mileage of unburied pipelines, and service boat corridors.
- ² University of Rhode Island, p. 298; draft E.I.S. predicts 6-8 exploration rigs (p. 588).

Our recommendation is that the final E.I.S. incorporate figures accounting for these factors in presenting the worst possible case for the acreage removed from fishing by offshore structures.

Along with the above pre-empted areas, fishing activity will also be disrupted by discarded debris on the ocean floor. Stephen B. Olsen of the University of Rhode Island has cited this as a major problem for fishermen in the North Sea. Dr. T. Kowalski, also of U.R.I., states that "bottom debris is the second most important cause of friction between the commercial fishermen and the oil companies". Although proposed Operating Order No. 7 prohibits unauthorized discarding of debris at sea, unavoidable or accidental discharges are likely to occur. The location of these bottom obstructions and debris should be made available to fishermen to prevent loss and damage of gear. Furthermore, the final E.I.S. should provide a discussion of methods to identify bottom debris; we recommend that labelling should be required for all materials used offshore.

A major concern of commercial fisheries is to minimize the area to be pre-empted for fishing because of sea-bottom obstructions, such as unburied pipelines. One of the proposed stipulations of this oil lease sale is that all pipelines will be buried, "when technically and economically feasible as determined by the U.S.G.S. Area Oil and Gas Supervisor" (p. 613). In order for the potential impacts of unburied pipelines to be evaluated, it is necessary that the criteria that the U.S.G.S. Area Oil and Gas Supervisor uses to determine technical and economic feasibility be explained in the final E.I.S. or in a future Development E.I.S. (p. 1317).

Finally, the draft E.I.S. gives an inadequate representation of the importance of the fishing industry to the economics of Gloucester, Boston, and New Bedford. The draft E.I.S. cites the percentage of fishing activity on a county basis. Some discussion of potential adverse economic impacts due to temporary loss of commercial fishing incomes to these communities should be addressed. It is essential that employment data directly related to fishing and fish processing be given for each municipality that is faced with possible losses.

Although the fishing industry makes up a small percentage of the total Massachusetts economy, it does make a significant contribution. Economic losses, even though they may be short term, of fish catches, equipment and processing, must be quantified and discussed in a context of the worst possible case.

OVERVIEW OF ONSHORE CONSIDERATIONS

Following is a brief review of on-shore impact analyses presented in BLM's Draft EIS for OCS Lease Sale 42. These comments should be prefaced by a general statement on the adequacy of the EIS's efforts. Recognizing that the level of uncertainty surrounding oil development on Georges' Bank is enormous, we cannot expect elaborate or highly refined predictions for on-shore activities and impacts. It is felt, however, that the Statement has lost any real utility for states and localities through the often confusing, generalized and elementary approach it has taken to assessing socio-economic impacts.

Area Evaluation

Fundamental to our concerns with the Draft EIS is the inconsistent use of geographic areas employed in analyses. The Statement defines only the following three types of sub-state districts to be used in certain impact analyses:

North Atlantic Planning Regions: The New England coast is broken into 29 regions based on each state's existing sub-state planning districts. For a number of states, this is by county. For Massachusetts, however, these are Regional Planning Agencies including M.V.P.C., M.A.P.C., O.C.P.C., S.R.P.E.D.D., and C.C.P.E.D.D. (presumably meant to include M.V.C. and N.P.E.D.C.).

North Atlantic Coastal Region: The Coastal Region is an aggregate of the first tier of coastal counties and some additional counties expected to experience O.C.S. secondary impacts.

Shoreland Zone: The Shoreland Zone, "a narrow strip of land (generally within 10 miles of the waterline) is the most significant area in respect to possible impact from offshore drilling for petroleum or the establishment of oil refineries".

The recurrent problem with these is threefold. First, it is seldom clear when and which of these geographic areas is being used in a particular analysis. Often, no area definition is cited, and more frequently, some undefined/indiscriminate geographic classification is used (e.g.

references are made to the "southeastern Massachusetts area", "Fall River area", etc.). In the majority of cases, these are broader, more generalized areas, effectively subsuming those "regional" areas cited above (e.g. Together public and private recreation use occupies almost 3/5 of the region's shore" (p. 438). This is based on a national study which would indicate the "region" here is the entire North Atlantic coast.). Without benefit of definition for these generalized areas, it is virtually impossible to either predict the level of a particular impact on Massachusetts' coastal regions or evaluate the accuracy of the draft E.I.S.'s conclusions. Secondly, by definition, these area breakdowns do not acknowledge state-wide impacts. Clearly, onshore development (both revenue and employment producing) will bear upon a state's overall socio-economic climate. Finally, as a result of inconsistent geographic definition, no correlations can be drawn among the impacts of various interrelated activities; nor can comparative analyses among "regions" be made (excerpt following, p. 418).

"The median value of owner-occupied housing units generally is lowest in Maine and becomes higher toward southern New England and the New York metropolitan area. Housing vacancy rates are also generally least favorable in northern New England than in the southern portions of the North Atlantic coast".

Data and Data Analyses

Resource information, based on the irregular use of geographic areas, is further confused by numbers, types, and interpretations of various data sources. The 1974 T.R.I.G.O.M. Report (a socio-economic and environmental inventory of the North Atlantic region) is the most frequently utilized source; covering land-use, recreational activity and population characteristics. This report, published in 1974, has clearly been developed from information preceding that date (i.e. 1971). When these data are thus applied in current analyses, it is assumed that they have either been extrapolated or they have been taken from projections

made within the report in 1974. Whichever the case, more recent and more accurate numbers are available from states and sub-state districts and should be utilized for impact assessments.

Certain socio-economic and environmental interpretations are based upon data derived from a number of independent reports.

The following references to recreational activity typify the incongruity of data sources:

Recreational use of the coast is discussed in terms of gross acreage, by North Atlantic Coastal Planning Regions, as existent in 1972 (p.424); in terms of percentage of "shore mileage", by the North Atlantic coast, as existent in 1971 (p.438); in terms of numbers of households participating in marine recreational activities, by total number of households per state, as existent in 1973-4 (p.445); and in terms of total state (coastal and non-coastal) recreational activity days, by northeast region, as existent in 1970 (p.446-7).

The document's reliance upon these varied sources and, subsequently, the confused resource picture it produces, makes any valid assessment of related impacts impossible.

The reader's ability to gain insight/evaluate impacts is further frustrated by undocumented or unavailable information sources. Among the more outstanding examples are:

- the methodology arriving at a 2.9 employment multiplier (average of 2.2 to 3.5) does not appear to be explained at any point in the EIS (p.898)
- a number of references made to "our analysis" appear without explication of methodology or citing of base-line data (p.437)
- a 1976 TRIGOM report is cited as a data reference; the report is unpublished (p.437)

The faulty relationship between and among data sources and geographic definitions only tends to produce non-comparative analyses among the state's resources.

Land Use Impacts

The EIS has accurately predicted that impacts will be greatest on those communities hosting on-shore development. Beyond a localized impact, the document argues that regional effects should be minimal, while a statewide impact would be negligible.

As a general comment, the notion that regional impacts will be minor is an inadequate response to secondary impacts associated with OCS. ("The extent of the primary activity expected from the potential sale is not great enough

to stimulate major secondary impacts." p.897). In the first instance, the regional economy will certainly feel the impacts of OCS facility development -- in housing "spill-over"; in support services; in land values. Secondly, regional facilities -- transportation; recreation -- will experience some increased pressure as a result of OCS.

While it is understandably premature to anticipate precisely which communities will receive OCS facility development, it is not inappropriate for the EIS to generically discuss localized impacts. There is a reasonable amount of "generalized information" which could be presented to help communities better assess, and make decisions about, OCS development. Following are specific references from the text emphasizing where such information should be provided:

- "Maximum population increases for the region as a whole could be expected to range from 12,700 to 25,000 persons" (p. 898). Third paragraph, insert the following sentence after p. 898: These numbers represent an aggregate of all O.C.S.-related employment over the period encompassing exploration, development and production. An average annual figure for O.C.S. employment over the life of the project should be provided. Further, it is clear that population influx will be determined by the type of onshore activity occurring and the amount of imported labor expected. If labor force requirements and the proportions of domestic and imported manpower were identified by associated facility, communities might better prepare for changes in housing and service needs. Similarly, some percentage of persons expected to purchase homes as opposed to rent apartments would help alleviate much of the uncertainty associated with housing this increased population.
- "Increased monies needed by some state and local governments should be made available by increased revenues generated by the increased level of economic activity, although the increase in monies may not always meet the demands." Some additional discussion of the relationship between costs and revenues should be provided. Accelerated growth rates within a community may result in a period of some 3+ years where service demands outpace any revenue produced by increased population. This creates a serious burden on services and infrastructure, most likely for communities within certain sub-regions identified as those expected to receive on-shore development.

A methodology clearly needs to be developed for determining secondary impacts on local and regional economies, land use, infrastructure, services and potential tax assessments. The application of this methodology in case studies would produce a clearer sense of the range of impacts.

Economic Impacts

Both primary and secondary economic impacts associated with on-shore facilities, with support industries, with importation of labor, as well as with fiscal impacts on communities suffer from overly general analyses. The following exemplify the more salient of these problems.

Labor: Regarding imported labor, "Not all of the increased jobs in the region would be filled by persons coming from outside the region." (p.898) What is necessary are projections on what percentage of all OCS related jobs can be expected to go to domestic labor; what the impacts of temporary labor needs are (in and out-migration of labor as stages of development and production occur); what percentage of the total estimated population increase is determined to be excess job-seekers; which domestic skills may be adapted for OCS related employment.

Fishing Industry: It is noted that "it is possible that competition for port and harbor facilities could adversely impact the fishing industry on a localized basis" (p. 922). With New Bedford, Fall River and Gloucester already targeted as likely recipients for onshore development, some substantive discussion of Massachusetts' fishing industry is clearly warranted. The final E.I.S. should address the effects of reduced fish landings from pre-empted fishing areas and/or losses from oil spills to individual cities and towns which rely on income from the fishery related activities. The draft E.I.S. minimizes the significance of the fish industry to local economies. For example, 21% of the Gloucester work force is engaged in fishing, processing fish, and supporting activities. We recommend that the final E.I.S. analyze landings and values on a port-by-port basis so that the significance of the fishing industry may be evaluated for each port. The document further states "Our analysis indicated that the proposed action would not result in a decrease in this (the fishing industry) sector". Impacts of port competition as well as probabilities of job transfer must be addressed, not disregarded.

Recreation: No economic assessment of Massachusetts' tourism industry is provided; an absence which is most noticable in discussions of oil spill impacts. Areas cited as most likely to experience spill impacts are Cape Cod and Cape Ann whose economies are largely dependent upon recreational assets. First and sole acknowledgement of economic repercussions is given under "unavoidable impacts": "Short term impacts could also occur to the recreation values and tourism economy of the area if an oil spill of considerable size should occur." (p.1224) The EIS naively assumes that adjacent beaches would absorb any recreationalists from impacted beaches, while it has already been cited that the majority of Massachusetts beaches have "resident only" access policies and that for public beaches, demand already far exceeds supply.

Long-term: It is assumed that "unavoidable land use impacts ... are localized and short-term in nature." (p.1208) By the EIS's own definition, the short-term ranges from 25 to 35 years; a period which would produce varied and significant land use impacts. In the long-term (35+ years) what are likely to be the social and economic impacts of disinvestment in Massachusetts? The EIS must take responsibility for defining timing and impact of likely development patterns and later, abandonment or reuse of facilities constructed for employment dependent upon O.C.S.

An additional severe economic impact which should be considered by the final E.I.S. are the effects of termination of oil and gas development on Georges Bank and the resulting disinvestment. Communities may incur severe economic hardships resulting from a buildup of municipal services for oil related facilities which will no longer be necessary. In addition, there should be a discussion of how solid waste, resulting from termination will be disposed.

We recognize that at this point in time there are a number of uncertainties associated with evaluating OCS exploration and development impacts on on-shore activities. The magnitude of this problem, however, is clearly exacerbated by the approach the EIS has taken in assessing those impacts. Given the peculiarities of the Massachusetts social and economic climate relative to other New England states, as well as the distinct character of Massachusetts' sub-state regions, the final E.I.S. should include a constant areal description by sub-state planning district and by state. Massachusetts, and likely other New England states, have accurate, accessible data and inventories which should be employed in impact analyses. It is expected, as well, that the use of sub-state socio-economic data would help define and assess those impacts either poorly or not addressed within the document.

Finally, the EIS recognizes that the greatest impacts -- environmental and economic -- will be experienced on a localized basis. At the same time, the document concedes that specific impact analyses for these target communities is senseless in the face of exploration and development uncertainties. This argument, while valid, tends to underscore the necessity of a post-exploration Statement which would lend itself to addressing site-specific, localized impacts. The likelihood of Massachusetts' experiencing on-shore development is already quite apparent. What is needed now is a commitment to respond to this eventuality with a final E.I.S. giving that level of refined social and economic analysis which would enable states to assess or plan for on-shore impacts.

C. OVERVIEW OF OIL SPILLS

Massachusetts more than any other state will bear the brunt of the impact from oil spills. Our economy and quality of life are directly tied to the health of the marine environment. The impact of oil spills on our recreation and tourism industries, on our commercial and sport fisheries could be severe. The draft Environmental Impact Statement has predicted that as much as 2.5-3 million barrels of oil may be spilled over the life of the field. The need for concern is clear.

Although information on oil spills is spread through some ten different sections of the draft E.I.S., our analysis addresses the following categories: Spill Probability, Trajectory Studies, Impact on Resources, and Oil Spill Prevention and Cleanup. Our specific comments follow.

Spill Probability

Our main concern with this section is that the spill probabilities are based on the experience in the Gulf of Mexico. This is made inadequate for the following reasons:

- 1.- The Gulf of Mexico experience fails to consider factors unique to Georges Bank such as severe storm conditions, heavy fog, and heavy ship traffic in lease area.
- 2.- The draft E.I.S. fails to consider the effect of offshore oil storage and transfer to tankers on the amount of oil spilled. In particular, there is no assessment of the impact of earthquakes, severe storms and collisions on storage and transfer systems. This is likely to be a major source of spills.
- 3.- Predictions on oil spilled due to blowouts, fires and explosions are based only on the expected number of exploratory wells drilled (224) rather than the total number of exploratory and development wells (724) (pp. 629-631).
- 4.- The draft E.I.S. bases its probabilities on data from 1956-75. The reporting system for oil spills prior to 1970 is widely conceded to be inadequate (due to lack of incentive to report spills) (p. 628).

The final E.I.S. should therefore rely on more recent statistics, take into account the severe weather conditions of Georges Bank, address the problem of offshore storage and transfer systems and base predictions on the total number of expected wells. In addition, the draft E.I.S. should analyze the experience of the North Sea to see what effect severe weather conditions have on oil spillage rates.

Trajectory Studies

While the methodology used by the U.S.G.S. for predicting oil spill trajectories appears to be sound, we have the following reservations:

- 1.- The study is based on inadequate wind and current data (p. 684). In particular, it does not present a "worst case analysis" for either winds or currents and fails to consider the effects of circular spinoff currents from the Gulf Stream.
- 2.- The methodology has not yet been published and is therefore unavailable for review. We must assume that it is valid.
- 3.- In describing the resources which may be impacted, the draft E.I.S. does not consider any migrating resources such as finfish and marine mammals.
- 4.- The study fails to take into account the effect of spills smaller than 1,000 barrels which are expected to be more numerous (approximately 50-100 per year) (p. 693).

Impact on Resources

The impact of oil spills on our resources is perhaps the most disturbing section of the draft E.I.S. The section is full of sweeping generalizations, has overlooked many definite papers in the field and draws conclusions which are not supported in the text. In particular, the following inadequacies exist:

- 1.- There is no mention, much less an analysis, of the two most recent and best documented oil spills in Casco Bay and Falmouth.* Many pages are devoted to World War II tanker sinkings (p. 579).

*Falmouth Oil Spill Citations

Blumer, M., et. a/, The West Falmouth Oil Spill, Woods Hole Oceanographic Institution (WHOI), Sept. 1970

Sanders, H.L., Grassle, J.F., and Hampson, G.R. , The West Falmouth Oil Spill, I. Biology, WHOI, April 1972

Blumer, M. and Sass, J. The West Falmouth Oil Spill, II Chemistry, WHOI April 1972

Michael, A.D. Van Raalte, C.R. Brown, L.S., "Long-term effects of an oil spill at West Falmouth, Mass. " in Prevention and Control of Oil Pollution, Sponsored by API, EPA, and USGS

- 2.- There is no quantification of the direct toxic effects of oil on the marine biota and no analysis from an ecosystems point of view (e.g. if zooplankton die, what happens to those organisms higher up on the food chain?).
- 3.- There is little discussion and no quantification of the economic effects of an oil spill. The impacts of both a large spill and an accumulation of tar balls on the Cape and Islands should be assessed in terms of dollars. What will tainting of finfish and shellfish mean to the commercial and sport fisheries?

Oil Spill Prevention and Cleanup

The sections of the draft E.I.S. relating to prevention and cleanup are accurate in that they describe available equipment and make note of pertinent regulations. However, the draft E.I.S. fails to assess the effectiveness of cleanup equipment in responding to an actual spill. No mention is made of the response time of the various cleanup operators (approximately 20 hours for the bulk of the tracts, assuming operations are based in Davisville), of the administrative process needed to get equipment into operation or the effectiveness of equipment under the severe wave and current conditions of Georges Bank. Contrary to the statement in the draft E.I.S., Massachusetts (or any other New England state) does not have an approved public disposal site for oily or other hazardous wastes. The question of what happens to the oil once it is cleaned up is not sufficiently addressed.

Massachusetts has previously made recommendations through comments on Operating Orders and lease stipulations which would prevent or mitigate the impact of oil spills. Many of these recommendations, such as tract withdrawals, location of cleanup equipment offshore, and contractual arrangements for onshore disposal of oily wastes have not, as yet, been accepted by the Department of Interior.

In conclusion, it is obvious that the draft E.I.S. has many shortcomings. While much data is presented, there is much we still need to know, particularly with regard to the biological and economic impacts. By addressing the concerns mentioned, the final Environmental Impact Statement could provide us with an accurate assessment of the impact we face from petroleum development on Georges Bank.

D. OVERVIEW OF OTHER IMPORTANT CONSIDERATIONS

Among other important considerations is the U.S - Canada Continental Shelf Boundary dispute. The draft EIS discusses this disagreement on ½ of page 89. The issues of major concern which should be discussed are: when an agreement might be achieved and if it is not, how the BLM will handle the 26 disputed tracts of this lease sale.

One of the major areas of concern for OCS development are the potential geological hazards which may be incurred. In view of this concern, the BLM has included shallow hazards evaluations and bottom sediment studies as part of its environmental studies program (p. 32). The results of the environmental studies program will be somewhat limited due to the great changes in geologic features over short distances on Georges Bank (Ralph Lewis, U.S.G.S., Woods Hole, personal communication). In order to prevent failures due to geologic hazards which cannot be completely analyzed by the environmental studies program, we have recommended a new Lease Stipulation 9 requiring a site-specific bottom hazard survey (see Chapter 3).

Additional information is also needed on proposed disposal plans of solid waste, especially for waste which results from oil spill cleanup. The draft E.I.S. expects to dispose of "oil impregnated sand, synthetic foam, straw, seaweed, and so on" by arranging for approved incinerators and landfill sites at the time of the spill incident (p. 1013). However, there are no approved public incinerators or landfill sites for oil waste presently in Massachusetts (Massachusetts Bureau of Solid Waste Disposal). There are privately owned incinerators which are designed for the incineration of oil impregnated wastes. But it is not known if these private companies could dispose of the volume of waste that would be generated by a major oil spill. This problem is dismissed by the draft E.I.S. by expecting that "special landfills may be built when existing ones cannot be approved" (p. 1013). These "special landfills" would be located in coastal communities which may not be willing to accept the adverse impacts of such a landfill. Further analysis of potential landfill sites and contractual agreements for cleanup and disposal should be included in the final E.I.S. so that the proper disposal of oil cleanup wastes may be assured.

Another issue which is in need of more detailed analysis by the BLM is the possible adverse effect of high helicopter noise levels as introduced on p. 1019. Dr. Scott Nixon of the U.R.I. points to the superficiality of the discussion. "Helicopter noise is mentioned as a potential problem for Nantucket and the offshore islands, yet the problem is then dismissed by saying that the impact can be "decreased" by using proper approaches and landing sites. However no locational analysis is attempted for the island to see if such remote siting is really possible on Nantucket." The number of anticipated helicopters are cited by the draft EIS as "two to five per service area", with no estimation of the total number of helicopters which could be concentrated in one locality. According to the R.A.L.I. program of the N.E.R.B.C., as many as 30 helicopters may be expected during the overlapping of the exploratory and development phases. The numbers of helicopters as well as mitigating measures to reduce noise pollution for major service bases (such as New Bedford, Boston, Gloucester) must be provided in the final EIS to enable evaluation of these potentially adverse impacts.

Among the other important considerations are the problems associated with the dumping of tanker ballast water. Most smaller and older tankers do not have segregated ballast tanks. Therefore it is likely that oil contaminated ballast water may be discharged in the Georges Bank. The final EIS should include a discussion of how ballast water will be disposed of from tankers travelling between the Georges Bank and the mid-Atlantic states. The draft EIS suggests that the sophisticated Load-On-Top (LOT) procedure is "the best method of eliminating the problem of oil discharge from tanker ballasting and cleaning operations" (DEIS p. 632). However LOT procedures require 3-5 days for oil and water to separate (personal communications, Arthur McKenzie Jr., tanker Advisory Service). Since it requires approximately 1 1/2 days for a tanker to travel from the mid-Atlantic states to the Georges Bank, some other form of treatment of ballast water is necessary. To prevent contaminated ballast discharges, we recommend that all tankers to be used on the Georges Bank, be required to have segregated ballast tanks.

The draft EIS has neglected to discuss the impact of the provisions of the Deep Water Ports Act of 1974 on George's Bank activities. As the definition of a "deepwater port" in the Act, 33 USC Sec. 1502 (10), is "any fixed or floating manmade structure other than a vessel, or any group of such structures, located beyond the territorial sea and off the coast of the United States and which are used or intended for use as a port or terminal for the loading or unloading and further handling of oil for transportation to any State...", we feel that the Act does apply and its provisions should be discussed in the Final EIS.

In several sections, throughout the draft EIS references are made to decisions being made by the USGS Oil and Gas Supervisor (pp 1152 1160). The draft EIS does not specify on what basis these decisions will be made. The final EIS should elaborate on the criteria and circumstances that the USGS Oil and Gas Supervisor will make decisions regarding on-site inspections, pipeline burial, well work over and well abandonment.

In addition, the BLM should specify the enforcement procedures which are available to the USGS. In many cases, USGS oil and gas regulations are difficult to enforce. We would also like the final EIS to demonstrate that the USGS will have an adequate budget to provide the necessary enforcement personnel.

Among the recent sources of information which has become available to this office is: Summary, Special Water Monitoring Study, COST Atlantic G-1 well conducted during period April 14 to July 14, 1976, prepared for Ocean Production Company by Environmental Devices Corporation, Marion, Massachusetts. This summary of the impact of the COST-1 drilling include data on the dispersal of drill cuttings and drill muds, meteorological data, and current flow data.

Another section of the draft EIS that is in need of additional comment is the discussion of impacts on cetaceans. The draft EIS discusses the impacts on whale feeding areas by suggesting that whales will simply feed in other areas (pp 817-818). But as H.E. Winn of URI has stated, other potential feeding areas are already severely impacted by man's activities. We would like the final EIS to provide a more detailed analysis of exactly where cetaceans will be able to feed in the event of an oil spill and what effect a spill would have on cetacean populations.

Furthermore, we feel that the draft EIS provides an inadequate coverage of possible impacts on the region's air quality. For the final EIS the BLM should investigate detailed air quality levels for specific areas of Massachusetts. According to testimony submitted by John McGlennon, Regional Administrator of EPA, public health standards for air emissions are exceeded by monitoring stations in parts of southeastern Massachusetts, Rhode Island and Connecticut. According to regulations under the Federal Clean Air Act, construction of new sources of air pollution where standards are not being met could be prohibited. The siting of onshore OCS facilities could be restricted by such regulations.

Among other important considerations is the US-Canada continental shelf boundary dispute. The draft EIS discusses this disagreement on 1/2 of page 89. The final EIS should cite the tracts which have been withdrawn from sale, clearly delineate all tracts in the disputed area, explain when an agreement might be achieved, and discuss alternatives which could become effective depending on the resolution of the boundary dispute.

Since Massachusetts, by virtue of its proximity to Georges Bank and its active fishing industry will bear the brunt of the impact of any oil spills, we are concerned that the E.I.S. quantify the environmental and economic impacts of oil spills. We find that the draft E.I.S. is deficient in its analysis of both direct toxic effects on the numerous species which spawn on Georges Bank, and of the chronic sublethal effects on adults of both fish and shellfish. Given that many species have been overfished to dangerously low levels, the additional strain posed by hydrocarbons may be the breaking point. Finally, the draft E.I.S. should provide a more in-depth presentation of the economic impacts and ramifications of oil spills occurring in or near recreational areas. An oil spill coming ashore can have broad impacts on the tourist dependent economies of the Cape and Islands. To enable the impacts of such a spill to be evaluated, the final E.I.S. should quantify these potential economic losses.

While the EIS considers future North Atlantic and future Mid-atlantic lease sales in the cumulative impacts section, it does not adequately address the combination of present and future, and North and Mid Atlantic lease sales on S.E. New England. It is quite obvious already that Davisville will service both areas, and activity may spill over into S.E. Massachusetts. Further explanation is needed as to how operators and supply boats will comply with possibly conflicting rules and regulations for the two lease areas.

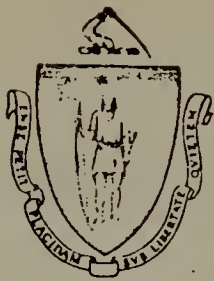
On March 23, 1976, Massachusetts requested the N.Y. OCS office to consider Cape Cod as a gas pipeline landfall for the purposes of the EIS. While not encouraging such a route, we recognize that there are no physical reasons why one could not be constructed. This route is also 45 miles shorter than a route to S.E. Mass., and would certainly be considered by industry, based on the economics of pipeline construction. The EIS should consider the impacts of such a route.

III. CONCLUSION

Many of these deficiencies could and should be addressed by the Bureau of Land Management in the final E.I.S. It is our intention that the above comments serve as the basis for improving the draft E.I.S., so that the final E.I.S. will adequately present the environmental impacts of proposed O.C.S. development. We recognize that some of the above concerns, such as the geologic hazards and the effects of chronic low levels of hydrocarbons in the marine environment may not be better understood when the final E.I.S. is prepared. Other data which will not be available for the final E.I.S. will result from the environmental studies program which is currently in progress. In order to integrate these new data with updated projections of the amount of anticipated O.C.S. activity and existing information, we recommend that a Development Phase E.I.S. be required prior to approval of the Development Plan. A development E.I.S. would permit the State to better understand and evaluate the impacts of O.C.S. development. Furthermore, Massachusetts will be in a better position to plan for onshore economic and environmental impacts as well as the offshore impacts to the fishing industry.

6. SPECIFIC TECHNICAL COMMENTS

The following technical commentary has been compiled from analyses of subject areas by the Coastal Review Center and the OCS staff of CZM. The individuals, and their respective subject areas, responsible for these comments are: Richard Chaisson - biology; Jamie Fay - oil leasing process; Sharon Alexander - dredging, ocean dumping, aesthetics, air quality; Lester B. Smith - geology; Charles Aldridge - solid waste, oil spills; and Sara Carroll socio-economics.



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I.E. 3

p. 73 What is the status of the National Contingency Plan as it applies to the New England area?

p.74 Have the regional plans for the areas concerned been developed? If so, a brief description would be useful. If not, the issue of promulgating them should be discussed.

p.77 A description of the present status of the East Coast National Strike Force would also be useful.

The status and availability of the Regional Response Plans are not given. This information is important towards assessing the areas clean-up capabilities.

p.78 The Mass. Dept. of Solid Waste Management has denied that any HAZARDOUS landfill sites exist for the disposal of oil-soaked debris resulting from clean-up operations. The DEIS states Mass. has approved SANITARY landfill sites, which it does, but not for hazardous materials like oil-soaked debris.

p.84 - 85 The adequacy of the different response groups both in terms of equipment and response time to handle varying types of spills should be analyzed here. (This issue is dealt with elsewhere, albeit inadequately, but it should be addressed here for continuity's sake.)

II Description of the Environment

A.- Geological Framework

In general the geologic framework is adequately discussed. Specifically, there are several areas which would benefit from additional coverage and clarification.

5.b. Potential Geologic Hazards - Shallow Fault Displacement

In order to delineate shallow geologic hazards, such as shallow fault displacement, shallow sub-bottom high resolution seismic profiling (3.5 KHz) must be conducted with close profile line spacing over leased blocks prior to exploratory drilling. This is necessary because the geology of the shallow sub-bottom changes dramatically over short distances in the Georges Bank area (Ralph Lewis, U.S.G.S., Woods Hole, personal communication). The draft E.I.S. fails to indicate that the shallow sub-bottom geology changes greatly over short distances and as a result it fails to point out the need for site specific surveys to determine the extent of geologic hazards to exploratory drilling and later to bottom pipelines.

c. Other Shallow Subsurface Hazards

page 127, paragraph 2 - High levels of light hydrocarbons, ethane, and methane were measured in core samples from the southern margin of Georges Bank during the U.S.G.S. shallow coring program. The presence of light hydrocarbons in high concentrations can cause bottom sediment failure when rigs and platforms are sited (Robert Miller, U.S.G.S., Reston, personal communication). Prior to exploratory drilling, borehole samples should be collected and analyzed for light hydrocarbon concentrations and geotechnical properties.

6. Information Needs

Some information on sediment transport and other potential hazards will be collected as part of the Environmental Studies Program, however, more data will be needed on a site specific basis for siting of exploration rigs, platforms, offshore storage tanks and bottom pipelines. Some of these data needs are discussed under comments on (5. Potential Geologic Hazards). In addition, studies on sediment transport will be needed site specifically.

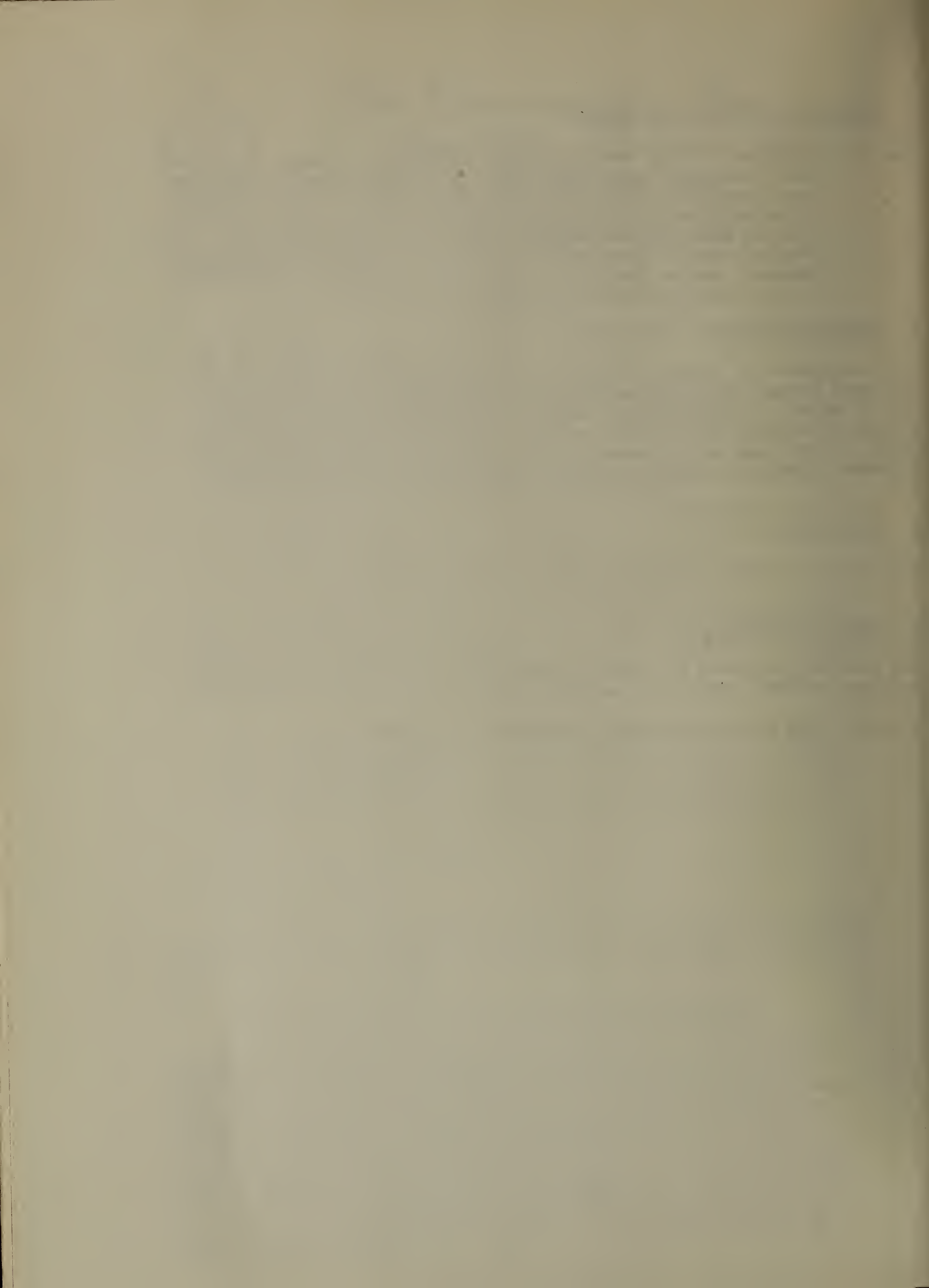
B. Meteorology

page 139-141 - Tables should give years of data collection.

C. Physical Oceanography

The draft E.I.S. relies too heavily on the T.R.I.G.O.M. study. More recent data are available which have not been used.

page 185 - One half of the page is repeated (typo error).





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Draft E.I.S., Section II.F.1, Offshore and Nearshore Biological Communities

The draft E.I.S.'s discussion of biological communities is absolutely inadequate because in breaking down the ecosystems in question into subgroups (phytoplankton, zooplankton, etc.), any sense of trophic relationships and interactions is either minimized or omitted. While some of the sections are well documented and exhaustive, overall the reader is given the impression that the relationships between different trophic levels are insignificant and that impacts on one level will affect that level alone.

- a. Phytoplankton - This section is well prepared and well documented. Some good editing would be useful. One adverse impact of phytoplankton blooms not addressed is their impact on community structure. High nutrient levels can lead to domination by biologically undesirable species. Also, studies by Gilfillan and Hanson have demonstrated that elutriates from lightly and moderately oiled sediments enhance productivity of g. tamarensis, the New England red tide agent.
- b. Zooplankton - The description of the zooplankton is not well done. This section has several major omissions (e.g. a discussion of fish eggs and larvae and identification of zooplankters by phylum and order). In some instances the draft E.I.S. misleads the reader by implying that (a) all zooplankton react identically to environmental perturbations and (b) the zooplanktons can be treated as one discrete unit. Obviously absent is a discussion of the importance of the zooplankton in the oceanic ecosystem.

Draft E.I.S., Section II.D. Description of the Environment:
Water Quality

In general, this section is well prepared. A bit too much time and space are devoted to nutrient levels and variations thereof. While it is understandable that these data are included so they are readily available, they are less important in a discussion of petroleum development than are heavy metal, hydrocarbon and turbidity data (pp. 28-31).

As in other sections, the discussion here is essentially regurgitation of T.R.I.G.O.M. (1974). Efforts should be made to use more recent data and hydrocarbon concentration data. (Available sources are listed on page 6-19.)

Specific Comments

page 213 - Nutrient data from Riley (1941) are too old to be of any use in this discussion.

Furthermore, discussion of N/P ratios is inaccurate. Ryther and Dunstan (1971, Science 171:1008) discuss N/P ratios in detail. This reference should be used to clarify the misunderstandings expressed in the draft E.I.S. (Nitrogen and phosphorus are important nutrients for phytoplankton. The concentrations of these elements control phytoplankton blooms.)

page 239 Please elaborate on new sources of water supply for the Boston area. Boston is presently attempting to divert water from the Connecticut River Basin to Quabbin Reservoir but the legality of basin transfers is being seriously questioned. (See Chapter 4 of N.E.R.B.C.'s Southeastern New England Study for clarification on this point.)

page 241 - River identified as Ipswich River is Parker River.

II. Description of the Environment

E. Air Quality

page 254 - Discussions of ambient air quality are of little value in estimating impacts from O.C.S. activity unless air quality measurements are taken in specific sites likely to serve as locations for onshore oil processing activities. The discussion in this section is too vague to be useful. Descriptive data should be included for air quality of Buzzards Bay, Cape Cod, and Elizabeth Islands, as well as Fall River.

Specific Comments

page 296 - Definitions of "euryhaline" and "stenohaline" are wrong.

pages 299-300 - The discussion of trophic relationships is alarmingly inadequate, simplistic and misleading. Twelve species are not representative of all zooplankton.

page 301 - The statements on this page are misleading. Some zooplankton populations may be regulated by ctenophores. Some (two species to be exact) zooplankters can withstand high levels of pollution.

page 304 - N.O.M.E.S. will not be published. Data for Massachusetts Bay will have to be collected elsewhere.

c. Benthos - This section is better than the others and presents a fairly good discussion. The value of commercial algal and invertebrate species should be discussed here. Figures on cash value of these species are available from the Massachusetts Division of Marine Fisheries and the National Marine Fisheries Service.

d. Fish - This section is fairly good although trophic relations are not adequately discussed and some of the data are too old to be trustworthy.

Specific Comments

page 332 - Salmo trutta does not belong on this list.

page 352 - Winter flounder have nearshore migrations.

f. Pelagic birds - This section does not adequately discuss avian communities and trophic relationships.

II. G. 1. a, b.

- p. 415 "Coastal Planning Regions: are the common area measure throughout this set of tables..." Clarification of when RPA's and counties are used is necessary. The section to which this applies is not clearly defined, as a result, any reasonable evaluation of accuracy is impossible.
- p. 418 "The median value of owner-occupied housing units generally is lowest in Maine and becomes higher toward southern New England and the New York metropolitan area. Housing vacancy rates are also generally least favorable in northern New England than in the southern portions of the North Atlantic coast." The area comparisons here are at best general, and the size of area for evaluation ranges from sub-regional areas to statewide. This is clearly an unacceptable system for measuring "Coastal Planning Region" impacts.
- p. 423 "has been adopted from TRIGOM(1974)." TRIGOM has done a number of studies, the particular study used in this analysis and subsequent updating should be cited to evaluate the accuracy of data and methodology. Additionally, more recent data than that of TRIGOM (if the report was issued in 1974, it can be presumed that the data was somewhat earlier) is available and should be employed. e.g. N.E.R.B.C.'s Southeastern New England Study.
- p. 425 "The shoreland zone, a narrow strip of land (generally within ten miles of the waterline) is the most significant area in respect to possible impact from offshore drilling for petroleum or the establishment of oil refineries. Why are these numbers limited to percentage of state land use, and are not applied by specific area? Could housing and infrastructure capabilities be assessed at this level of detail, at least for those areas likely to receive on shore development?
- p. 438 "The 1971 National Shoreline Study indicated that 481 miles, or 10% of the region's shore mileage, were devoted to public recreation use and another 2347 miles, almost half of the entire region's shore, were in private recreation use. Together public and private recreation use occupies almost three-fifths of the region's shore." What is "the region"? Why is this study dated 1971, utilized for analysis? This is the only time data from this report appears -- presumably there are more recent studies and inventories which could be employed.
- p. 445 "A Bureau of Outdoor Recreation study, while not applying specifically to coastal areas..." Why was a BOR study chosen as opposed to SCORP data which would indicate better numbers of users for specifically coastal areas? How are "coastal areas" interpreted here?
- p. 456 Under Massachusetts: "In 1971, there were over 48,000 motorboats...registered in the state (TRIGOM, 1974)." Again, why was TRIGOM used (which employs 1971 data). Clearly, more recent data is available to indicate what increase in recreational boating has occurred in Massachusetts.

II. Description of the Environment

G.1.i. Ocean Dumping and Dredging

page 552 - Cites 8 dumping grounds approved by the Corps of Engineers for disposal of polluted dredge spoil along the North Atlantic Seaboard. It is my understanding in verbal communication with Mr. Vito Andreliuns of the Corps that those designations are no longer valid. Though in some cases these sites may have been previously used for spoil disposal, they are not presently available for use based on Corps and E.P.A. regulations. In order for one of these sites to be re-opened, an E.I.S. would be necessary, subject to Federal and State review. Thus, should dredging of polluted harbors become necessary for O.C.S.-related activities, problems in arriving at an acceptable disposal site may arise. At present, in the Massachusetts area there are six designated clean disposal sites and one site for polluted dredge material, the Boston Foul Area. These areas are located at 42°21'N, 70°40'W; 42°46'N, 70°46'W; 41°40'N, 70°21'W; 41°26'N, 70°01'W; 41°27'N, 70°22'W; 41°36'N, 70°41'W; and 42°25'N, 70°35'W respectively.

1. j. p557 Just because the Federal government has no control over solid waste management at other than Federal installations does NOT mean that BLH is not required to analyze the environmental impacts CCS operations will have on state and/or local solid waste management programs.

Although discussed elsewhere in different parts of the DEIS, the kinds and quantities of solid waste that CCS operations can be expected to generate should be looked at here. This information is essential if a state or locality is to react to CCS development in a timely fashion. The small amount of information that is offered is so scattered as to be useless.

n.559 - 564 These pages are unnecessary and should be deleted.

12

565 Ref. TRIGOM (1974) "The total population in the study area..." Again, given more recent and more accurate numbers projected by states, why was TRIGOM used? What precisely does the "study area" constitute at this point?

569 "Regional Economy: The region became vulnerable..." What is the "region"? The base economies of Maine, New Hampshire, and Massachusetts are vastly different, and any analysis which encompasses all of New England states will effectively obscure the economic realities of a particular state.

74. Under Massachusetts: "The textile industry is losing economic importance because of the rapid growth of the services sector." This is not an accurate statement. Service industries are lower in basic wages than manufacturing, and subsequently would not jeopardize the textile industry. Any decline in manufacturing in Massachusetts may be attributable to the higher cost of doing business in this state compared with other states providing lower property taxes, lower utility rates, etc.

6-9



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Draft E.I.S., Section II.G.3. Previous History of Major Oil
Spills in the Region

pp. 579-
582

The discussion of previous oil spills in the region does not reflect the recent history of spills. While at least two major spills have occurred in the past 10 years (West Falmouth and Casco Bay), these events are ignored. A significant literature on this subject exists and was completely ignored (e.g. Blumer, et al, 1970; Blumer and Sass, 1972; M.I.T.-Sea Grant Studies). In the two pages of text, the bulk of the discussion centers on World War II era spills. No attempt was made to use data that the Coast Guard has collected in recent years. A concerted effort should be made to include up-to-date information in the final EIS.

Volume II

III Impact on the Environment

A.- Basic Assumptions Regarding Causes of Offshore Environmental Impacts of the Proposed Action

p.590 No discussion is offered concerning the fate of the wash water. What will the volume be and how will it have to be disposed of?

The effect of cutting muds on the environment are site specific. Zingula's study of the Gulf of Mexico are not relevant to the Georges Bank scenario. Cuttings could seriously impact lobster grounds, for example. Further study by the BLM is required.

p. 591 Table III-3 is missing.

p. 593 Discussions of uptake of trace metals from drilling mud into the ecosystem AND possible impacts are NOT provided in Section IIIA⁴ or Section IIIB², as claimed.

p594 This discussion does not allow for the pre-emption of fishing grounds as a result of gathering lines or the effect of clustering.

Page 594 - The E.I.S. indicates that structures other than semi-submersibles would probably be used. If jackup rigs are used, areas of unstable bottom sediments must be avoided. This includes avoidance of areas with a high percentage of light hydrocarbons and areas of intensive sediment scour.

Page 597 - This section should be revised as there are several factors which would support the use of concrete production platforms in the North Atlantic. (1) Many of the tracts proposed for leasing are located in water depths of up to 600 feet, making concrete more competitive; (2) these same deep water tracts have relatively flat sandy bottoms, suitable for concrete platforms; (3) large storage volumes would be required because as stated in the E.I.S., oil transport would most likely be by tanker, not pipeline; (4) as recent experience in Brazil shows, deepwater harbors are not required for the construction of concrete platforms. The E.I.S. should therefore address the impacts of concrete platform construction.

Page 601 - Sand and gravel mining necessary for construction of concrete platforms is discussed in this section. This includes potential use of offshore sand and gravel deposits, however, no mention is made of the current moratorium on all offshore sand and gravel mining in the waters of the Commonwealth or of the Marine Sanctuary laws which also forbid offshore mining for commercial purposes in most offshore areas of the Commonwealth.

Section III C-6 is cross-referenced in this section. This presumably should be III D-7.

p.602 Buffer zones must be allowed for when computing the removal of fishing grounds by exploratory or production platforms.

Page 608 - The E.I.S. states that before formation water is discharged into the ocean it is treated and all but "traces of entrained oil" are removed. How much are traces?

Page 609 - Since "one barrel of formation water will be produced for every barrel of oil produced" there will be a "maximum of 67 to 228 gallons of oil introduced daily into the marine environment during peak production for this source". How much does this add up to over the life of these oil fields? What will be the fate of all of this water oil?

p. 610 What is the basis of the "anticipation" that brines will become well mixed. Statements such as these that disclaim adverse impacts must be substantiated.

Concerning sewage treatment and disposal from the rigs the discussion should include the volume each rig will produce. Also, means of providing for good dilution and dispersion of the effluent should be considered.

p.612 The discussion does not describe clearly the fact that any substantial find of gas will result in the placement of gas pipelines on the ocean floor.

Concerning pipelines in general, a discussion of how the decision to pipe will be made and who will make that decision should be offered. Will states have any input?

Page 613 - All pipelines will be buried only when it is determined to be technically and economically feasible by the U.S.G.S. Area Oil and Gas Supervisor. No estimates are given about where burial might not be technically or economically feasible. How much cost is necessary before burial is not economically feasible?

The loss of valuable fishing ground and the greater possibility of pipeline damage from anchor dragging, etc. should be factors used in determining the economics of non-burial.

p.614 Where and why would the Supervisor ever not require the burial of pipelines?

Page 615 - Estimates should be given of how much area will be utilized for gathering pipeline systems. These areas will be restricted from fishing; however, no mention is made of this when total areas restricted from fishing are discussed.

Bottom currents on Georges Bank are apparently quite high in many areas and there is good evidence that buried pipelines may be exposed by erosion (D. Folger, personal communication). What method of surveillance is proposed to identify exposed pipelines? What if scour is so great that burial is impossible?

p. 615 The comment that most of the Continental Shelf is sand covered is not an adequate assessment of the effects of the disturbed sediments that result from the laying of pipe. The effects will be site specific - depending on the type of material to be trenched and the types of life that inhabit the area. And again the BLM assumption is not documented.

Offshore Pipeline Routing

Page 617 - In this section it states that "B.L.M. will conduct pipeline corridor management studies should oil and gas be discovered as a result of this proposed sale". Since pipeline routing and spills which may result from pipeline failure can potentially have a very great impact on the marine environment, an E.I.S. should be required specifically for locating offshore pipeline routes.

Page 619 - It is mentioned that "pipeline(s) could make landfall on the Cape", however, under the Commonwealth of Massachusetts' Marine Sanctuary Laws (M.G.L. 132A, Sections 13, 14 and 15) this would be illegal.

The Cape Ann Area has a high seismic risk, therefore, it is questionable whether pipelines should go ashore there. Liquefaction due to seismic shock would result in soft-sediment deformation and probably pipeline deformation as well. If pipelines must go ashore near Cape Ann, additional requirements on pipeline strength and ability to withstand high seismic accelerations should be mandatory.

Page 620 - Mention should be made of possible economic losses to tourism should oil be spilled from pipelines near Cape Cod. What would be the impact of spilled oil on the Cape Cod National Seashore?

Tankers

Page 620 - How much oil spillage will occur as a result of oil transfer between platform and tankers? On Page 631 of the E.I.S., it states that during early production and if production remains low, tankers will be used exclusively. If this is true, why is there very little discussion of possible spill impacts during oil transfer from platform to tanker?

p.621 This discussion should include the following:
a look at what types of storage facilities will be necessary to service these tankers, both on and offshore;
a look at the impacts and risks involved with these structures; a look at the impacts and risks involved with the transfer of oil from offshore storage facilities to tankers and back to onshore facilities.

Also, this would appear to be an appropriate place to discuss tanker traffic problems again including the impacts and risks involved along with mitigating measures that might minimize any adverse affects foreseen.

d. termination

Page 624 - During abandonment, lines are purged of undrained hydrocarbons by water flushing. This water is disposed of onshore. Where onshore is disposal supposed to occur?

a. Pipeline Accidents

Page 627 - Spillage of oil due to pipeline accidents is based on statistics from the Gulf of Mexico. Since conditions in the North Atlantic are more severe in terms of sediment transport, pipeline spills may be more severe.

It is also mentioned that "due to improved technology and stricter regulations, much lower spillage rates might be expected from this proposed sale." No mention is made of what improved technology is feasible and what stricter regulations should be promulgated to reduce oil spillage.

p.627 What are the new technologies and regulations referred to? How will they lower pipeline spillage rates?

p.629 What "air pollution" will result from a gas blow-out? It is misleading to "average" quantities of oil spilled per spill because averaging dilutes the impact of large spills.

b. Oil and/or Gas Well Blowouts

p.630 The assumption of the maximum "average" blow-outs the sale may result in is, as they admit, sheer speculation and should be deleted. Only after more is known about the Georges Bank area will we be able to predict the chances and impacts of oil/gas blowouts.

p.631 This section dealing with tanker accidents and operations should be located with the previous section discussing tanker operations (see page 621).

d. Tanker Accidents and Operations

Page 632 - Is there proof that the load-on top procedure will reduce the amount of oil introduced into the ocean by more than 50%? Enforcement of existing cleanout regulations seems to be one of the big problems.

p.632 What per cent of tankers that would service the Georges Bank field would be IMCO members? In other words, to what extent will IMCO regulations and procedures have any effect on tanker operations off our coast?

The new USGS standards apply only to over 70,000 dwt vessels while only <70,000 dwt vessels are predicted to service OCS operations. These standards, therefore, will not affect tanker operations around Mass's coast.

This section does not discuss how accidents may come about or what efforts may be employed to avoid them. Most importantly, the worst case scenario, that of a large near shore spill, is not considered.

Pages 633 and 634 - Since the small tankers used in early production on Georges Bank will not be required to use the L.O.T. procedure, spillage will not be reduced by the 50% mentioned above.

e. Natural Phenomena

Page 637 - During seismic events, liquefaction of unconsolidated sediments often occurs. If collapse of sediments due to liquefaction occurs beneath the subsurface safety valve, the casing could shear causing a major oil spill.

Page 639 - In discussing oil spillage from damaged onshore storage systems, the E.I.S. refers to operating orders which apply to offshore structures. What are the regulations for onshore facilities?

It is indicated that pipelines "are relatively insensitive to all natural phenomena except ground faulting and slumping along pipeline routes". Erosion should be included in this list of sensitive phenomena. Erosion could remove sediments covering pipelines exposing them to anchors and fishing trawls. Table III-11 (page 641) should also include erosion.

Page 640 - It is stated that "although judged to be slight for almost all factors, some parts of the New England coast may be more prone to earthquakes than others". This statement makes no sense. What is judged to be slight for almost all factors?

Page 641 - Even if careful soil analysis is done, platforms and onshore storage facilities may be subject to liquefaction during an earthquake event.

III. A. 3. Impact on the Environment; Fate of Oil

Page 648 - Study by Jeffery (1973) leaves many unanswered questions. In a controlled spill experiment, Jeffery noted that most of the oil "disappeared" after four days with only patches remaining. Oil does not just disappear. It must go somewhere. There are no data presented that indicate just what happened to the oil. We must assume that the oil remained in the sea and was dispersed by wind, waves, and tides.

Page 651 - On this page it is implied that there is a major loss through evaporation of hydrocarbons of 12 or less carbons. This overlooks two important factors. First, much of the oil involved in a spill is subject to mixing by wave action and consequently becomes entrained and is unavailable for evaporation. Second, hydrocarbons that do evaporate can easily be precipitated back into the ocean.

On p. 651 the reader is told of significant losses of light molecular weight (LMW) hydrocarbons in the field. Then, on p. 653 we are told that loss of LMW

parafins and aromatics implies the loss of more toxic components. Aromatics have different physical and chemical properties than LMW paraffins.

It is the aromatics, furthermore, that are the toxic components.

Page 654 - What is omitted from the discussion here is that the depletion of straight chained alkanes causes higher levels of toxicity on a weight by weight basis.

The statement about the effectiveness of microbial decay in estuaries is incorrect.

In the same sentence it is indicated that microbial degradation is less effective when oil is incorporated into sediments. Since this happens all the more in estuaries, any benefit accrued by higher nutrient levels is negated.

Page 656 - First sentence of last paragraph says that emulsifications increase surface area and, hence, degradative processes. Page 655 states "This type of emulsification can persist much longer than oil itself on the open sea and being more tar-like, can do more damage onshore than oil".

Page 657 - Boesh et al. (1974) report that photo- and auto- oxidation are insignificant weathering processes. Extrapolating from $2\frac{1}{2}\mu\text{g}$ to 2000 kg/km^2 cannot be accurately done. This represents a several order of magnitude extrapolation which, given the factors that enter into play when considering a large spill (wind, waves, etc.), is unreasonable.

Page 659 - The second sentence on this page is untenable since the degree of damage is dependent upon a host of parameters.

p.659 This section should give equal time to the effects and fate of oil as it relates to the living resources that come in contact with it. The reader is misled into believing that oil is weathered away by various natural processes. Although this is ultimately true, many things can happen which can adversely affect the marine environment in the interim. These impacts should be recognized and discussed. (This section dealing with the fate of oil should be tied in with other sections in this EIS, such as the sections discussing spill probabilities and trajectories, and the effect of oil and trace metals on food webs, so a comprehensive look at biological impacts is achieved.)

Draft E.I.S., Section III.A.4. Impact on the Environment: Trace Metals in Marine Food Webs

60-
70
The chapter on oil and trace metals in marine food webs is extremely confusing.

The writer(s) refers the reader to Appendix 12 for details, knowing that most readers will not bother reading the lengthy, technical appendix. Furthermore, no literature citations are made in the chapter (they are all in Appendix 12).

References belong here in the text. The bulk of my comments are directed at Appendix 12. However, the following comments are expressly directed to section III.A.4.

1.- The prose in this section is very poor and confusing.

2.- The statement that trace metals are essential for human life while true, is extremely misleading. In the context of the draft E.I.S., the concern is with adverse impacts of heavy metal concentrations greater than background levels. These impacts are not discussed. Instead, we are told that heavy metals are important as enzyme activators, etc.; this is irrelevant.

3.- , The draft E.I.S. states that there is doubt about the carcinogenicity of crude oil residues. This is absolutely not the case. Known carcinogens are found in crude oil. Additionally, food chain magnification is dismissed as important only in certain instances. (Refer to comments on Appendix 12.)

p.665 The statement that classical food web magnification of petroleum does not occur is undocumented and unreferenced.

p.670 This section should also look at the "worst case" situation involving the release of large quantities of heavy metals resulting from accidents and machinery breakdown.

The investigations cited here concerning the effects of heavy metals from offshore petroleum operations are unreferenced. 6-17

Appendix 12.

The combination of this appendix and section III A 4 presents the reader with a confusing and disjointed discussion of hydrocarbons and heavy metals in marine food webs. Section III A.4 refers the reader to App. 12 for "discussions of the various studies which have addressed the effects (of heavy metals and hydrocarbons in marine food webs)." However, Appendix 12 has an incomplete discussion of the carcinogenicity of hydrocarbons and no discussion of the environmental impacts of heavy metals. In fact, we are told that a discussion of the impacts of oil spills on available food supplies for one trophic level "is beyond the scope of this paper" (p. 12-43).

App. 12 sheds no light on what impacts can be anticipated from the introduction of heavy metals into the North Atlantic. It is our hope that the final EIS will contain a complete, meaningful analysis of the environmental repercussions that the introduction of heavy metals and/or hydrocarbons in the marine environment will generate. Such a discussion should include but not be limited to analyses of the impacts that damage to one group of organisms will have on other groups, the public health hazards that the presence of these toxic substances will cause, and pathways for transport of heavy metals and hydrocarbons, including biogeo-chemical cycles, in marine ecosystems.

Another problem with the hydrocarbon and heavy metals discussion is that Section III A.4 is sketchy and vague and contains no literature citations while App. 12 is lengthy and very technical. To be useful to public policy makers, the EIS must contain a thorough but succinct analysis of the topic of questions in terms that can be understood by non-scientists. Additionally, references to literature must be included and must be complete (many of the citations in App. 12 are not in the bibliography). Further, much of App. 12 is improperly referenced.

Sections taken from the NAS publication Petroleum in the Marine Environment (1975) should be credited.

Specific Comments

- 12-10 This section is an example of technical writing that cannot be comprehended by the lay reader. One can scan any page of appendix 12 for more examples.
- 12-24 No mention is made of tainting of fish or shellfish.
- 12-33 This general statement is not true. Some molluscs, crustaceans and fish can dispose of some of the accumulated hydrocarbons.
- 12-37 No doubt remains about hydrocarbon carcinogenicity. Hydrocarbons contain known carcinogens. The paragraphs following this statement document this well.
- 12-41 Even when organisms depurate some of the accumulated petroleum hydrocarbons (PHC), they retain higher than background levels.
- 12-42 A discussion of impacts of oil on trophic relations is very important.
- 12-47 The discussion of petroleum sources of heavy metals is somewhat lacking.
- 12-51 The Gulf Universities Research Consortium study reached very predictable conclusions. Louisiana crude is unusually low in heavy metal concentrations.
- 12-65 The word "regulate" is inappropriately used here. No data show that there is actual regulation of heavy metal concentrations.
- 12-69 Again, no evidence has been presented to indicate that there is regulation of metal concentrations in response to environmental gradients.

12-72 Oil spills can occur in many places. Therefore, discharge of heavy metals will not necessarily be localized.

The G.U.R.C. study is again cited; it dealt with Gulf crudes which are low in heavy metals.

The following are recent publications that cover the effects of heavy metals on various organisms:

Holcombe, et al. 1976. Journal of Fisheries Research Board, Canada 33:1731-1741

Peterson, R.H., 1976. Journal of Fisheries Research Board, Canada 33:1722-1730

Connor, P.M., 1972. Marine Pollution Bulletin, 3:190-192

Thurberg, et al. 1975. Marine Biology, 23:171-175

Bryan, G.W. 1971. Proceedings of the Royal Society of London, Series B, 177:389-410

Collier, et al. 1973. Bulletin of Environmental Contamination and Toxicology,
10(6):378

Calabrese and Nelson. 1974. Bulletin of Environmental Contamination and Toxicology,
11(1):92-97

5. Oil Spill Trajectories in the North Atlantic Region

Pages 671-680 - Hypothetical drilling sites were used as starting points for oil spill trajectories. Drilling site spills represent the greatest number of O.C.S. accidents, however, pipeline breaks and leaks represent the greatest volume of oil spilled (Table III-6, page 628). Conceivably, these pipeline failures can occur anywhere along the pipeline route and probably the number of failures in nearshore waters will be greatest due to the greater likelihood of ships anchoring in shallow water near shore. The unfortunate impression that the oil spill trajectory section gives is that the risk of a spill going ashore is directly related to the drill site. This is obviously not true when pipeline failures are considered.

p.682 When assessing oil spill probability and impact the worst case scenario must be looked at, not the "representative case" scenario.

p.696 Again the worst case must be analyzed as opposed to the representative or averaged case. Thus, one can not average the probability of a spill coming ashore over the four seasons, as they have done here.

p. 709 How is the mean size of a small spill figured to be 3 barrels? Where do they get this figure from?

Ditto for the assumption of 50% loss due to evaporation. Averaging dilutes the impacts that result from worst case incidents - and BLM should be looking at worst case impacts.

B.1. Geologic Hazards

Page 710 - The fourth sentence of this section reads: "This capability (pre-drilling geologic and geophysical sampling surveys) coupled with information gained from the recently completed Cooperative Offshore Stratigraphic Test (C.O.S.T.) well ... suggests that the subsurface geohazard potential in the North Atlantic O.C.S. may be minimal". Unfortunately, this sentence gives the impression that the entire Bank may be devoid of subsurface geologic hazards which is not true. The U.S.G.S. Atlantic Margin Shallow Coring Program revealed that light hydrocarbons are present in high enough concentrations on the upper continental slope - outer shelf to cause slope stability problems.

In addition, geophysical studies conducted by the oil companies utilize high energy acoustical sources which are designed to give a record of the deep sub-bottom geologic structure. In order to determine the presence of geologic hazards, most of which occur in the shallow sub-bottom, high resolution seismic profiling (3.5 KHz) is necessary. In addition, preliminary surveys of Georges Bank have been conducted with great distances between survey lines. Due to the very rapid lateral changes in geologic structure in this very complex area survey spacing must be very close to recognize most geologic hazards. In addition, shallow borehole samples should be collected prior to platform emplacement. Light hydrocarbon and geotechnical analyses should be performed on these samples to determine the bottom stability.

B. Impact of North Atlantic Conditions on Offshore Oil and Gas Operations

1. Geologic Hazards

Page 713 - A statement from Webb (1975) says that the Tehachapi earthquake "with the epicenter in one oil field and the fault trace straddled by others, caused no pipeline failure and no spills at the many hundreds of drilling or producing wells in the area", therefore, he concludes that "It is evident that offshore equipment designed to withstand offshore hurricanes will withstand major earthquakes".

Based on the effects due to an earthquake on one oil field it is not reasonable to make such a broad generalization.

Page 714 - The E.I.S. refers to Idriss, et al (1976) for a "review of soil response to seismic motion and designing offshore structures for earthquake forces". No attempt is made in the E.I.S. to apply this study to soil conditions and earthquake response for the Georges Bank area.

Page 715 - Substantiate that "sediment migration is most active in shallow water depths of 0 to 40 meters".

Extra wall thickness on pilings is not going to prevent undermining of structures by sediment erosion. This undermining could lead to failure of the structure.

Page 716 - It is to be expected that the designing firm of the Texas Tower is not going to admit that failure was due to negligence on the part of the firm to provide for scour preventive measures.

What other kind of rig could have been used on the Scotian Shelf to avoid the stability problem which occurred?

Page 716, paragraph 1 - What method of pipeline surveillance is proposed to identify it after exposure has occurred?

Paragraph 3 - What type of engineering studies are proposed prior to pipeline emplacement? What if all sediments in the pipeline route are determined to be unstable?

2. Impact of North Atlantic Weather and Physical Oceanographic Conditions on Offshore Oil and Gas Operations

Page 729, paragraph 1 - It should be noted that C.O.S.T. hole drilling on Georges Bank occurred during the summer months which typically has milder weather than other seasons.

C. Impact of Oil and Gas Operations on Offshore Environment

1. Water Quality

Page 737, paragraph 1 - Where is the evidence that dilution is several thousandfold?

paragraph 2 - The statement that "the incredibly large dilution factor of the open ocean would mean that the long and short term effects would be minimal and very localized" is not substantiated by facts.

Section III C 1: Water Quality

What we are told in this section is that although predictions of actual water quality deterioration are speculative at best, there will be no significant impact.

p 737 - We are told that pollution from normal drilling and production operations and related coastal industry cause 6% of total world pollution. "Actual estimates for the North Atlantic area alone are not available, but the overall effects would not be significant." This statement is wildly speculative; if estimates cannot be made then impacts cannot be assessed. By BLM's own estimates, exploration and development will put 242,000 and 540,000 tons of cuttings and 34,500 tons of muds into the marine environment. During the life of the field BLM estimates 2.6 million barrels of oil will be introduced into the North Atlantic.

p 738 - The only anticipated decrease that can be inferred from Table III-14 (p 645) is non-LOT tanker operations.

Page 738, paragraph 1 - Table III-14 referred to in this section does not include a section on pipeline spills. Elsewhere in the draft E.I.S. pipeline accidents are mentioned as being the number one source of oil spillage by volume, page 628, Table III-6.

Furthermore, there is no accurate way to predict that spill contributions would be less than indicated in Table III-14.

Page 739, paragraph 1 - The draft E.I.S. states that "clays, barite and chemicals ... mix rapidly with the ocean water and are diluted several thousandfold within a few hundred years". It is nice to know that dilution will be that great in a few hundred years, however, what will be the dilution in a few hours, days, weeks? This shorter time frame would be more appropriate for determining biological impacts.

Page 744 - How was the percentage increase of $< .001\%$ derived for tanker related oil pollution resulting from this sale? Has any volume of spilled oil been determined for platform to tanker transfer operations?

p 744 - The conclusion of this chapter cannot be supported by any of the data in the text. In fact, p 731 states that "actual percentage increases are difficult to estimate at this time..." A favorable conclusion is drawn in the absence of any basis for such a supposition.

III C. 2 Impact of Oil and Gas Operations on the Offshore Environment: Biological Communities.

It is in this section that the DES evinces its most serious deficiencies. To be acceptable, this section should contain a very comprehensive analysis of impacts on biological communities as integrated systems.

The major problems is that the effects of oil spills on individual sections of the ecosystem are examined independently with little attempt to synthesize or integrate findings. The final EIS should include a painstaking, researched analysis of the anticipated impacts of oil and gas operations on Georges Bank on the North Atlantic and Georges Bank ecosystems as dynamic, inter-related, functioning units, not as static, discrete and independent components.

Again, a discussion of heavy metal impacts is absent.

- page 749 - The draft E.I.S. here states that impacts on meroplankton will not be permanent because of "the large reproductive potential and numbers of larvae associated with these species ..." Of the hundreds of thousands of eggs that a single adult may produce, less than a handful survive. Oiling the larvae of a particular species may seriously affect year class strength.
- page 752 - We are informed here that the entire discussion is based on the assumption that tankering will not increase. This contradicts statement on p. 631.
- page 754 - No explanation is given as to why there will be rapid recovery.
- page 755 - No studies have been mentioned that indicate plankton will be able to withstand and recover from oil spills. On the contrary, the data have indicated that there will be massive mortality.
- page 756 - Damage occurring to only one year class is not a mitigating factor. Year class strength has important ramifications as the species ages.
- page 757 - Inhibition of photosynthesis is another impact of chronic low-level pollution.
- b. Benthos -
The impact of offshore spills on benthic flora in Massachusetts and Rhode Island is not discussed, while detailed discussions are presented for other areas. Furthermore, there is a misinterpretation of Blumer and Sass's work. At one point, impacts of drilling operations are assessed based on the experience of such activities in the Gulf of Mexico. Such a comparison is invalid.
- page 759 - Foster, et al, study is misrepresented. Porphyra were not just "damaged"; they were killed.
- page 761 - The situation described represents a severe environmental perturbation, not an ameliorating factor.
- page 762 - The discussion of offshore spills ignores Massachusetts and Rhode Island, while the discussion of nearshore spills ignores New Hampshire - Maine and Connecticut - New York.
- page 765 - No discussion of heavy metals.
- page 766 - Statement on toxicity of crude oil, referenced to Blumer and Sass, is directly contradictory to their statement. The draft E.I.S. states that fresh crude is more toxic than weathered crude; this is not true on a weight by weight basis (Boesch, et al, 1974).
- page 767 - Effects on grazers has impacts on flora; these are not discussed.

page 768 - Estimate on recovery time for West Falmouth is valueless.

page 771 - Again, weathered oil is more toxic.

page 775 - Cuttings may be inhabited by motile benthic organisms, but will smother sessile ones.

Estimates for effects of drill cuttings are made "assuming conditions to be similar to the Gulf of Mexico...". This is absolutely invalid. Georges Bank has a vastly different oceanographic regime than the Gulf.

page 778 - West Falmouth is an example of how slow recovery can be.

page 784 - Summary totally ignores estuarine areas.

c. Fish - The conclusions reached here on probable impact of spills on fish are untenable. The draft E.I.S. relies on data from Olsen and Saila (1976), then draws their own conclusions which contradict statements made in the literature they have cited. Fish have tremendous fecundity because so few young survive. Broadcasting oil kills young indiscriminately; therefore, there can be serious repercussion for an entire population. Moreover, the draft E.I.S. contends oil will be contained on one tract. While this may not be the case in fact, spawning activity can be extremely localized. Consequently, local spills could conceivably destroy an entire year class.

page 786 - There should be references here.

page 788 - Rice's (1973) work used unrealistic ceiling levels of oil concentration.

page 790 - We cannot assume that all swimmers will be able to avoid contamination by swimming away.

page 791 - Assumption that oil is more toxic when fresh, upon which the entire mortality argument is based, is unsupported in the literature.

page 794 - Effects on spring distribution statements are completely untenable. Data are taken from Olsen and Saila who do not draw the same conclusions. In fact, they say such conclusions cannot be drawn at all. Further, you cannot assume oil will remain on one tract. Also, it cannot be assumed that spills will have less impact in areas that are less fished. These data are for domestic landings and effort. Foreign landings and effort are not analyzed. This is especially important because U.S. goes to extended jurisdiction on March 1, 1977. Finally, a large fraction of the total population does not have to be affected for a spill to be significant.

page 795 - Now they are saying that even if a spill affects large densities, it will be unimportant. This assumption is based on no data whatsoever. No population studies are mentioned, no attempt has been made to anticipate the impact on population dynamics.

page 796 - The same points raised above are applicable here.

page 798 - Gulf impacts are of little value here. There will be much broader dispersal of drill cuttings on Georges Bank.

page 799 - While the use of indigenous species is useful, it is not essential for a gross view. In many other instances, the DEIS cites studies using non-indigenous species. In this case the DEIS should do the same. The assertion that impacts will be limited to the discharge area needs support

page 800 - 30 ppm of oil is lethal in some species; consequently, this is not a chronic low level impact.

page 805 - Alewives should be included in this discussion.

III. Impact on the Environment

C.3., Air Quality

pages 836 and 1072 - The report mentions possible nitric and sulfuric precipitation effects resulting from oil spills, blowouts, drilling exhaust, and refinery emissions. What is known regarding the possible impacts of this acidic rain either on-shore or offshore?

page 836 - What is the extent of the "smoke or haze problems" which would be caused by partially oxidized materials released to the air? How long will it take before pollutants are significantly dispersed?

pages 836 and 1205 - Refer to comments submitted by the Department of Environmental Quality Engineering on the preliminary draft E.I.S. (attached).

The Division of Air Quality Control has reviewed the partial EIS, submitted to this Division on July 23, 1976. The following comments are submitted:

1. First Paragraph

It is recognized that some degradation is temporary until a failure is arrested, and meteorological conditions remove the degradation products except for the normal exhaust of the platform generators.

An estimated prediction of the number of installations should be possible. The following can be done:

- A. Take estimates of the size of the field from U.S. Bureau of Mines.
- B. From previous off-shore-field experience it should be possible to predict the number and size of the installations.
- C. From previous experiences, and improved equipment it should be possible to predict number of blowouts and equipment failures.
- D. From records of existing operations it should be possible to estimate the amount of gaseous emissions from the platform generators.

2. Second Paragraph

- A. Winds are prevailing Southwesterly.
Winds can be from the Easterly direction as well (North and/or South) during the winter and spring seasons.
- B. From the information estimated and predicted in the preceeding paragraphs, and any point or location nearest to shore, an estimate of pollutant concentration should be possible for one blowout or equipment failure. It is suggested that a Gulf Coast Off-Shore Crude Oil Analysis be used.

3. Third Paragraph

It should be possible to give at least a "ballpark" estimate of the amount of pollutants reaching shore from the information previously outlined above.

4. Fourth Paragraph

A Natural Gas Analysis for this E.I.R. could be assumed to be the same as for the Gulf Coast.

The same technique can be used for predicting emissions from natural gas blowouts as described above for an oil blowout.

III D. Impact of Oil and Gas Operations or

1.c. Navigation

Page 853 - According to the draft E.I.S. "there will be both positive and negative impacts on the area's ports, shipping and navigation activities", however, none of these impacts are even mentioned.

OCS DES III,^{D.}2. Commercial Fisheries

pp 854 - The DES in this section, and in general, presents an inadequate
855 assessment of conflicts with and effects in the commercial fishing industry that OCS development will cause.

First, the data upon which the discussion is based are domestic fisheries statistics. Foreign fisheries are more important on Georges Bank than are domestic and some data pertaining to these fisheries are available from ICNAF and NMFS. Moreover, on March 1, 1977 the US will go to extended jurisdiction which will make heretofore international fisheries domestic. Additionally, on January 1, 1977 Canada will extend its economic zone to 200 miles and this action should be addressed. The resolution of the US Canada boundary dispute is important both for fisheries and for oil and gas development on Georges Bank.

Second, the section is deficient because it does not take into account the effective removal of fishing grounds by platform buffer zones, gathering pipelines, clustering of platforms, and valves. The DES calculates removal of fishing grounds only by platforms. Steve Olsen of the Coastal Resources Center, URI, has made calculations of fisheries preemptions based on realistic assumptions. For exploration, semi-submersible rigs with a 300' buffer zone outside of the anchor lines will remove 360 acres/rig; for 6-10 rigs the total removal will be 2160-3600 acres. For development, assuming a 500' buffer zone around each of 25 to 50 platforms (in the North Sea the oil companies are pressing for 1 km) the removal will be 5504-11,008 acres. If we assume that each platform has a loading buoy with a 300' buffer zone, then the removal will be 9025-18048 acres.

A "worst case" analysis, based on the experience of the North Sea, would assume that rigs will be located in clusters of four drilling small fields. Each cluster, including rigs, gathering pipelines, etc., would remove 10 square miles. For 25-50 platforms the effective removal of fishing grounds jumps to 40,000 - 80,000 acres. All of these figures rise significantly when navigation problems that fishing vessels commonly encounter are considered.

Third, the effects of drill cuttings, muds and formation waters on scallops are not addressed. Fifty percent of the prime scallop grounds on Georges Bank are located in tract areas. The impact of drilling operations could, therefore, severely impact this fishery. According to the DES, hundreds of thousands of tons of drill cuttings and muds will be discharged during exploration and development. Contrary to statements made in the DES, these materials will not remain within 150' of the platform or rig. According to data obtained during COST-1 operations, drill cuttings were detectable .7 miles from the rig within 12 hours of discharge. This indicates that there will be rapid and wide spread dispersal of these materials. What impact burial and low-level release of hydrocarbons will have on sea scallops is, consequently, a major concern. Moreover, juvenile red hake and known to be commensal to sea scallops (the, live in the mantle cavity). Therefore, the impact that destruction of scallop populations will have on red hake stocks should be investigated .

Fourth, the argument that egg and larvae mortality from oil spills will be insignificant is, once again, presented. As my review of Section III C 2.c stated, this is not a valid conclusion. The DES fails to adequately assess the potential impacts of oil spills on year class strength of commercial fish species and what effect decreased survival of eggs and larvae will have on the fishing industry.

Fifth, the effects of fish concentrations in the inviolable buffer zones surrounding platforms are not discussed. If it is true that fish will find platforms an attractive area in which to congregate, what will be the effects of this phenomenon on fish stocks available to fishermen and what will be the impact of chronic low level hydrocarbon and heavy metal discharge on fish thus gathered?

Sixth, the impact of an oil spill on shad, striped bass and other anadromous or migratory fish populations is not addressed. Such an event could profoundly affect sports fisheries.

Finally, the impact of egg and larvae mortality from oil spills on sports fisheries is not discussed.

Specific Comments:

Page 854 - there will be a serious conflict between pipelines and dredges. The assessment of this problem is superficial.

Page 855 - pipelines will be buried where it is "technically and economically feasible." The assumption made here, that only platforms and vessel traffic will interfere with fishing, is therefore, invalid.

Preemption data are incorrect. See above.

Page 856 - based on domestic fisheries data.

Page 858 - WHOI (1976) study is based on weight, not economic value. The most productive area in terms of weight is not necessarily the most valuable.

Page 862 - spawning areas can be very localized. Moreover, despite high fecundities, few offspring survive. Any mortality can have serious repercussions.

Page 863 - a discussion of damage to sea scallop populations belongs here.

Page 868 - again, scallops should be mentioned here.

Shellfish in West Falmouth are still tainted 7 years after the spill. Two months is an unrealistic figure.

Page 878 - economic impacts should be more thoroughly discussed. This presentation is trivial. Additionally, the impact of the 200-mile limit on

fish processing and related activities should be addressed.

Page 879 - sports fishermen will not be able to fish within 500 M buffer zone.

Page 883 - the last sentence on this page makes little sense.

III D 7. Impact on Future Ocean Mining

Page 893, paragraph 1 - In determining the value of sand and gravel resources potentially impacted by pipeline corridor placement, the projected cost of sand and gravel should be calculated for the proposed life of the pipeline.

III. Impact on the Environment

D.5. Ocean Dumping and Dredging

page 889 - O.C.S.-related onshore development such as pipe coating and rig fabrication may require some dredging of polluted harbors. Should there be no available approved site for disposal of this dredged material within a reasonable distance from the dredge site, significant problems may arise in the development of suitable disposal sites. Increased pressures to dredge these harbors may lead to the use of a new disposal site with its associated adverse environmental impacts.

page 888 - The draft E.I.S. states that "wastes generated at offshore facilities, including spent drilling mud, waste paper, plastic, metal, and so on, when not disposed of offshore, are transported back to shore for reclamation or disposal at local incinerators or landfills". The wording of this statement implies that there will be some disposal at sea. I would like to know what materials (and in what quantities) will be disposed of at sea, in what locations and with what anticipated impacts in terms of aesthetics, turbidity, toxicity, bio-degradability, etc.? What will be the impacts of sand and drill cuttings dumped onsite to shellfish beds near the rigs? There should be some discussion of the pros and cons of dumping onsite versus removal of mud to another site for disposal.

The practice of indiscriminant trash disposal at sea is a long-standing problem. How will it be ensured that materials which are designated for land disposal will not be prematurely unloaded off barges at sea, or negligently dumped off drilling rigs? What mitigations are planned to protect against accidental dumping and to minimize effects of such dumping should it occur?

page 889 - Pipeline burial impacts. If oil and gas are discovered and pipelines are selected for transport, "there is a remote possibility that the pipeline might pass through the Foul Area dumpsite in Boston Harbor". Such an action would warrant serious prior examination of impacts of resuspension of toxic substances, release of previously stabilized substances for bio-uptake and spread of chemicals whose containers have degraded with time and salt water action.

- p. 898 "Not all of the increased jobs in the region would be filled by persons coming from outside the region. Maximum population increases for the region as a whole could be expected to range from 12,700 to 25,500 persons." What percentage is expected to be imported -- this would clearly help communities plan for expected increased demand for housing and services. Do the numbers of increased population represent workers families (e.g. 2½ persons per job) or surplus job-seekers, or both? These numbers should be quantified. The aggregate numbers here do not reflect the realities of temporary labor impacts occurring by activity over a number of years.
- p. 908 "In cases where oil is tankered and replaces imports..." The assumption appears to be that discovery of a large amount of recoverable resources would eradicate or severely reduce New England's importation of foreign crude. It may be correct to assume that some significant amount of foreign crude would continue to be imported and stored in Mid-Atlantic or North-Atlantic refineries, as absolute oil demand escalates. Further, U.S. tankers will supplant foreign, and tanker traffic should remain constant.
- p. 912 "Port areas within Washington ... Bristol, Essex and Suffolk Counties, Massachusetts ... are most likely to be used as operations bases." Can these "likely" areas be defined?
- p. 917 "Industry might have requirements that necessitate construction in remote areas which may require new infrastructure construction." Can these industries which are anticipated be named and the locational and space needs determined? Also, it is cited on p. 926 that within coastal southeastern Massachusetts a 112% increase in construction is anticipated. Given both industrial space and infrastructure needs together with more specific site locations, communities might be in a better position to assess impacts and needs.
- p. 920 "Increased demands stemming from increased population and economic activity could also put increased stress on existing water systems and sanitary systems." In near-future development scenarios, communities experiencing growth will have difficulty in immediately meeting water and sanitary demands, therefore, where the document can be more specific in anticipating likely areas of growth, communities may better prepare for these demands.
- p. 921 "Increased monies needed by some state and local governments should be available by increased revenues generated by the increased level of economic activity, although the increase in monies may not always meet the demands." Here, as well as several other places within the EIS, the cost of coping with accelerated growth impacts is mentioned. Some discussion of state and federal funds available, e.g. energy impact funds, should be mentioned.
- p. 922 "While our analysis indicates that it is unlikely, it is possible that competition for port or harbor facilities could adversely impact the fishing industry on a localized basis." "Our analysis indicates that the proposed action would not result in a decrease in employment and output in this (the fishing industry) sector." What is the basis for this "analysis"? In Scotland (as the OSP Manual discusses), fishing industry members sought alternative employment in OCS, thus impinging upon the fishing industry. This information should be evaluated and anticipated by the document

- p. 941 "Many of the skills found in the region would enable persons to adapt their skills and move into positions that were OCS related." Can these OCS related positions be defined? A.D. Little reports that "industry sources estimate that during the first five years of OCS activity only 10 percent of the direct OCS employment openings would be available to New England residents. This percentage might increase to only 30 percent after 20 years of OCS operation and production activity. These estimates are typical of industry practice throughout the world." Can the type and rate of jobs expected to be filled by "New Englanders" be quantified? If the A.D.L. study can be assumed to be correct, this would substantially alter the employment projections for Massachusetts residents for OCS.
- p. 980 Pipecoating yards discussion: Given that pipecoating yards will need to be located on deep channel areas with ocean access (or within the coastal zone) impacts should at least be mentioned -- air emissions generated by asphalt and concrete operations; hot water discharges from cooling operations; and pollution run-off.
- p. 992 "In the following discussion, it has been assumed that oil reaching the land at any point along the coast will impact recreation or potential recreation sites." There is no discussion in this section relative to the economic impacts caused by closing of beaches. The Cape and Islands, highly dependent upon the tourism industry for economic stability, would be severely impacted by an oil spill. Clearly, a substantive discussion of the economic bases of these regions needs to be presented.
- p. 997 "The soiling of recreational beaches by an oil spill would terminate their use as a recreational source until the removal of oiled sand has been completed." Can any assessment of clean-up time be given?
- p. 998 "The elimination of a beach, especially a high use beach, from the recreational areas available to the public would cause higher utilization of other nearby beaches." It has already been pointed out in the EIS, that very few of Massachusetts' beaches are public. Those which are have a high use rate. If the National Seashore, one of the State's greatest recreational resources and one likely to receive oil spills, were impacted, there are few resources which could be utilized during cleanup. This would produce a severe economic hardship on the state as a whole, and the Cape in particular whose commercial activities are dependent on a certain level of tourism.
- p. 999 "Horseneck Beach State Reservation is the most heavily utilized with over half a million visitors annually (TRIGOM, 1974). Closure of this beach could cause a significant number of swimmers to use other beaches." The state simply does not have the alternative resources to accomodate public beach users should a spill impact Horseneck Beach. A realistic assessment which includes economic impacts clearly needs to be discussed.
- p. 1006 "The importance of good contingency plans and timely execution of the plans cannot be overstated..." This is clearly true. However, the EIS should address what federal contingency plans are operative and provide some discussion of the importance of communities having plans which will complement those of the feds or rig operators.

1. F. p.1012 Further information on the physical state and quantities of the different forms of solid waste that will be brought to shore for disposal is needed.

p.1013 How is spilled oil recycled or rerefined. What type of facilities are needed for this operation - and what are the costs and availabilities of such facilities?

Mass. does NOT have any approved landfill sites for the disposal of oil spill debris.

Concerning "special landfills" for oil spill debris, who will decide where they will be placed, who will run them, and who will finance them?

p.1014 Whatever information has been gathered on the Special Landfill created for the Narragansett Bay Spill should be spelled out here as opposed to just being referenced.

p. 1014 Again, what type of facilities are needed to recycle drilling muds? What are the costs and availabilities involved? And who will be responsible for financing and running these facilities?

Where will the "undesirable solids" removed from the cuttings go? What will they consist of?

III E.l.g. Aesthetic

pages 1017-1018 - The draft E.I.S. notes that onshore development associated with O.C.S. production would most likely be located in areas with scenic value (Narraganset Bay, Buzzards Bay, Cape Ann) and recommends that siting and landscaping be used to reduce aesthetic impacts. It is our view that except for smaller facility components, it is unlikely that landscaping could serve to effectively minimize visual impacts. Therefore, C.Z.M. perceives the siting of the O.C.S. oil facilities to be the major consideration in visual impact minimization. C.Z.M. policies for the visual protection of coastal areas recommend that facilities should be located at sites (1) where the magnitude of the viewing population, both resident and transient, will be minimal (e.g. by using existing topography and vegetation effectively to screen facilities as opposed to putting facilities in flat open areas); (2) where visual access to water and natural shoreline features will not be impaired either by the facility itself or by emissions from stacks, etc.; (3) where there would be no adverse impacts on features of historic or cultural significance, such as scenic rivers; or (4) where facility height, mass, or construction materials will not be out of harmony with the existing visual character of the area.

page 1018 - Mention is made in this section of noise pollution from helicopters. Nowhere else in the E.I.S. are impacts related to helicopters discussed. According to estimates made by the R.A.L.I. Program of the New England River Basins Commission, 1-2 helicopters per exploratory rig can be anticipated to be used. The draft E.I.S. expects a possible 8 exploratory rigs (p. 588). Therefore, a maximum of 16 helicopters may be expected during the exploratory phase. Given up to 25 platforms during the development phase, we may eventually expect to see approximately 30 helicopters in use. Thus, it would seem reasonable that there should be some discussion in the draft E.I.S. of air traffic impacts and safety issues as well as noise impacts to the various possible locations presently under consideration for heliport development. Regarding the noise impacts expected from the helicopters; where warranted, the feasibility of use of mitigative engine noise dampers (as have been developed by the U.S. Army) should be seriously examined for helicopters using onshore heliports.



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Draft E.I.S., Section III,E.2. Impact on Natural Environment

- page 1021 - Oil returning to surface can cause much more than a nuisance to recreation, e.g. ecological damage.
- page 1022 - Removal of oiled sands would exacerbate Massachusetts' already critical erosion problems.
- page 1023 - The discussion of pipeline impacts, here as through the rest of the draft E.I.S., is poor. Assessment of probable impacts is alarmingly superficial. Impacts on sandy beaches and wetlands must be looked at very carefully.
- page 1024 - The discussion of effects of oil in wetlands is misleading. One coating studies are questionable since in the natural environment coating is more likely to be chronic and long term. Studies by Burns and Teal show considerable damage is caused by oiling. (Burns and Teal, 1971, Technical Report of the Woods Hole Oceanographic Institution, No. 71-69.)
- page 1029 - Destruction of dunes or dune vegetation can have severe impacts. This has been amply demonstrated and is common knowledge. There is no documentation that the duration of impacts will be short term.
- page 1035 - Salt marshes are not protected from spills. West Falmouth is an example of salt marshes being most heavily impacted.
- page 1038 - U.S.G.S. study states that oil will reach shore.

page 1041 - This sounds wonderful but are there any plans to put booms in front of rivers? What devices will be used to drive water fowl away?

page 1044 - Why is it unlikely that some populations will be twice affected? Besides, this is misleading. The cumulative sale of # 40 and # 42 really means that the probability of a spill is increased.

Eskimo curlews have been sighted recently in James Bay, Canada.

page 1048 - This edge effect argument is misleading. The assumptions used here are unfounded.

page 1049 - Most terrestrial organisms (e.g. invertebrates) cannot escape. Only large vertebrates can escape a sudden spill.

III.E.2.e. Water Quality and Supply

Pages 1055-1056 - Comments on water quality impacts utilize average increases in water pollution which does not really mean much when applied to a specific area impacted by water quality deterioration. Some areas may have very little increases in water pollution while other areas may have high increases with a net effect of small increase when averaged over the entire area.

page 1057 According to the Mass. Division of Water Resources, the North Shore of Boston (including Ipswich) could be considered to be water deficient in many areas.

Page 1058 - Water supply will be adequate for development in the southern shore, New Bedford, and Taunton areas if larger surpluses are developed according to the draft E.I.S. What if these surpluses are not developed in time for oil development? Are these potential supplies near areas that will be impacted by development?

Pages 1059-1060 - According to the draft E.I.S., both large spills and long term leakage could occur which could contaminate surface waters and underground aquifers. The solution according to B.L.M. is that "alternative sources of supply would have to be developed until the problem is corrected". Parizek (1970)* states that "where they (petroleum products and other hazardous substances) enter the ground-water reservoir, their presence may not be known in advance of damaging a water supply; the rate and direction of their movement may not be known, and they may not be flushed from or diluted within aquifers to tolerable limits for years to come". Obviously, the supply of alternate sources of water is not great enough in Massachusetts to eliminate any current sources by oil pollution.

* Parizek, R.R., 1970, Impact of Highways on the Hydrogeologic Environment, in (D.R. Coates) Environmental Geomorphology, Proceedings volume of the First Annual Geomorphology Symposia Series, Binghamton, N.Y., pages 151-199.

III E.2.f. Air Quality

pages 1061-1073 - The draft E.I.S. discusses onshore impacts in terms of impacts from onshore O.C.S.-related facilities, noting that there is a probability of increased air quality deterioration related firstly to emissions from refineries and secondly to general population, commercial, and industrial increases resulting from O.C.S.-related industries locating in Massachusetts. Though the draft E.I.S. notes that impacts will vary depending upon existing air quality of the area in which the O.C.S.-related activities locate, the discussion is too vague and does not relate to the specific localities most likely to be impacted. It should be possible to pinpoint more exactly where development is expected to occur and thus estimate more accurately the extent of impact.

page 1065 - Discussion is lacking on impacts of specific onshore operations such as unloading of oil, pipe coating, etc. These discussions should be broken down in more detail.

III F. Proximity Evaluation

1. Purpose

Page 1074 - The proximity evaluation fails to assess the possible negative impacts on resources at different distances to pipeline routes and tanker routes. Since oil must be carried from the producing fields by one of these two means, there will be definite impacts from spills from these two sources along their routes to land based facilities. Since a large percentage of spilled oil will undoubtedly result from these sources the proximity evaluation means little without them being considered.

p.1078 The proximity evaluation with respect to oil spills is grossly inadequate in that it does not look at tanker or pipeline related spills. Thus, the worst case situation has not been included.

III I.4. Dredging

page 1125 - O.C.S.-related dredging of harbor channels containing polluted spoil may require new offshore or onshore methods of disposal. No mention of possible problems involved with this disposal option is made. Discussion of this issue is important in consideration of O.C.S. impacts.

IV. Mitigating Measures

B. Measures Relating to Specific Aspects of the Proposal or to Specific Potential Impacts

2. Pipelines

A separate E.I.S. should be required for pipeline route determination, because some of the most severe impacts will result from this activity. These impacts involve physical disruption of the environment and more importantly, are potentially the source for the greatest volume of spilled oil.

C. Other Mitigating Measures

Geophysical Information Concerning Geological Hazards

Page 1174 - Shallow bore-hole cores should be taken from proposed platform locations to determine the geotechnical properties and light hydrocarbon content of these sediments. These data are essential in determining the stability of sediments for bottom structures.

V. Adverse Impacts (Unavoidable)

C. Wetlands and Beaches

Page 1201 - Long Island wetlands are mentioned as lying "along the most likely tankering route of oil from the proposed lease", however, no mention is made of the Massachusetts wetlands which also lie along this route. There are many areas along the Massachusetts coast where salt water wetlands could be subjected to oil pollution from offshore sources.

VI L. Geological Hazards Summary

My comments on hazards are interspersed throughout Volume II comments.

V. Adverse Impacts (Unavoidable)

E. Air Quality

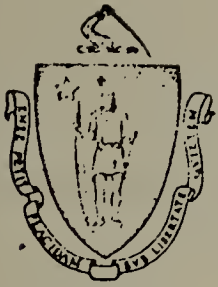
pages 1206-1207 - Discussion is inadequate in analyzing variance of magnitude of air quality impact for specific locations likely to be considered for onshore facilities location in southern Massachusetts. There is no indication from this section that air quality impacts will enter into facility siting decisions.

- p. 1208 "Unavoidable land use impacts ... are localized and short term in nature." Short term is defined as a 25 year period encompassing OCS exploration, development, and operation. Land use impacts should include some discussion of the economic and social impacts of disinvestment -- this is not included in either the adverse impacts section or within Volume II - impacts on the environment. Unemployment and vacated housing and industrial sites need to be examined in some general sense.
- p. 1211 "The adjustment of a local economy to spot shortages in its economy requires time." When accelerated growth occurs in a community, the time lag between an equilibrium for increased service demands and revenues generated by greater population can be some three years. Both the more specific identification of sub-regions likely to receive this increased growth and an assessment of existent infrastructure in those areas would allow communities to better prepare for OCS developments. This needs greater attention in Volume II.
- p. 1213 "The extent of the recreation impact is dependent upon the location and size of the spill..." The economic impact, based on recreational opportunities lost, must be discussed -- both here and in Volume II.
- p. 1214 "The most likely recreation areas to receive impact are those on Cape Cod and Cape Ann, Massachusetts..." Given that these are likely impact areas and the economies are highly dependent upon tourism, economic repercussions should be specifically addressed for these areas.

p 1214 - More than 2000 acres will be removed from fishing. According to Steve Olsen, the figure is closer to 9000 acres.

p 1215 - Adverse impacts of pipelines have not been adequately addressed either here or in the rest of the text. The economic impacts of oil spills, including offshore spills, should be assessed.

- p. 1223 "With regard to this proposed OCS Sale No. 42 ... may result in short-term adverse impact to communities..." Does this "short-term" period remain at twenty-five years? Again, an argument should be made to discuss the impacts of disinvestment and in the near-term, of demands of infrastructure and services which a community will suffer under until revenues meet costs. This demands some attention in Volume II.
- p. 1224 "Short-term impacts could also occur to the recreation values and tourism economy of the area if an oil spill of considerable size should occur." Why was this economic impact not fully discussed in Volume II? It is an inappropriate point (e.g. unavoidable impacts) to bring this up without some earlier substantive discussion.



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Section VII C Irreversible Commitment of Fish and
Wildlife Resources

The exploration, development and production phases of lease sale 42 will lead to an irreversible and irretrievable commitment of fisheries resources due to preemption of fishing grounds, destruction of prime scallop grounds by drilling muds and cuttings, and the introduction of hazardous substances into the marine environment. Accompanying these resource commitments will be an economic halo effect; i.e. magnification through the economic web. This section does not address these resource commitments.

VIII. p1240 Concerning alternative d., it is agreed that "...this alternative would provide the maximum protection to valuable natural and commercial resources..." to quote the DEIS. It is hard to believe, however, that "...this alternative would have substantially the same impact as the proposed sale." BLH's summary of this alternative is not only misleading and confusing but also contradicting.

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EPILOGUE

The decision to proceed with the exploration and development of oil and gas resources coincides with yet another major quest in the North Atlantic, the revitalization of our commercial fishing industry. The challenge is to find ways to pursue both opportunities to the maximum extent, and we look to the Draft Environmental Impact Statement as a management tool to achieve that goal.

It is with disappointment we observe that the Draft EIS on the proposed Lease Sale 42 lacks analysis fine enough to make accurate policy and management decisions. The failure is in part an accident of time. There simply is not enough information before the Lease Sale either about the environment or about the location, nature, and extent of oil and gas reserves to analyze crisply the implications of exploration and development activities. Because the only information that's available before the Lease Sale are best-guess estimates and the experience of other OCS regions, the Draft EIS is destined to come out with generalities and qualitative description.

Given these facts, it seems reasonable to suggest that environmental impact analysis occur at two different junctures in the OCS leasing process--before the Lease Sale as a first-cut depiction of the interactions between oil and gas activities, particularly exploratory activities, and, later in the process, before development of the field proceeds.

We propose that the Department of Interior prepare a Development Phase Environmental Impact Statement for the Lease Sale area as a whole which is published prior to the decision to approve the first Development Plan. The Development Phase EIS would incorporate the findings of the environmental baseline studies program for the North Atlantic, the results of the USGS bottom sediment transport study, and environmental information gathered by the offshore operators during exploration. It should describe the actions proposed in the first Development Plan and those expected to occur over the life of the field for the entire Lease Sale

area. USGS could prepare scenarios on development activities expected for the Lease Sale area as a whole based on information about well operations which the lessee is required to collect and make available to the Supervisor (CFR Title 30, Section 250.38). (NOTE: We are not suggesting the disclosure of proprietary data. Rather information on the location, quality, and production of resources for the Lease Sale area should be used to revise scenarios on the numbers and kinds of facilities, structures, and manpower offshore, and onshore originally published in the pre-Lease Sale EIS). It should analyze the environmental impacts expected to result from the actions proposed in the Development Plan and for the Lease Sale area as a whole, including oil spill risk and trajectory analyses and long-term implications for the commercial fishery industry. Finally, it should explain the effectiveness of the development phase Operating Orders and Lease Stipulations to mitigate the negative environmental impacts. It should recommend how to apply mitigating measures to development phase activities.

Further, the USGS should carefully review subsequent Development Plans in light of the overall Development Phase EIS and in light of any supplemental data, state of the art knowledge, or experience from ongoing operations. This review would constitute an environmental assessment, which the Secretary of Interior would use to determine the need for additional Environmental Impact Statements under the NEPA process. This recommendation is patterned after current procedures instituted by Interior for the Santa Barbara Channel.

In summary, it has been made clear to us in our review of the draft Environmental Statement that there is insufficient information at this time to adequately assess the environmental impacts of the development and production phases. The present E.I.S. should therefore concentrate more heavily on exploratory activities and a second E.I.S. should be published prior to development activities.

As stated above, we believe that the E.I.S. should be a tool for making accurate policy and management decisions on both the federal and state level. The present E.I.S. is lacking in this regard, partly because there is little information on levels of development and production activities, and partly because the E.I.S. does not integrate its findings into an impact assessment model. Therefore, we request that the Bureau of Land Management develop an impact assessment model for evaluating exploratory activities in this E.I.S. and development and production activities in subsequent E.I.S.'s.

The purpose of the impact assessment model would be to measure economic and environmental impacts resulting from the interaction between the exploration and development of oil and gas and the expansion of the New England fishing industry through the 200 Mile Economic Zone. The model could draw on information in the draft E.I.S. and recommended revisions as well as recent studies such as the N.E.R.B.C./R.A.L.I. Project¹, and the U.R.I. Fish-Oil Study².

¹ N.E.R.B.C./R.A.L.I. Project, Onshore Facilities Related to Oil and Gas Development, November 1976.

² University of Rhode Island, Coastal Resources Center, Fishing and Petroleum Interactions on Georges Bank, November 1976.

The most important revision is that the description of the offshore environment be an ecosystems model integrating the relationships among meteorology, oceanographic, species, and trophic levels. On top of a base case, fishing and oil activities under several sets of assumptions would be overlaid, and the impacts resulting from the interactions would emerge. Nine combinations of these assumptions should be used:

Facilities and Activities--Offshore and Onshore--
Associated with North Atlantic Exploration and
Development*

- 1.- No find.
- 2.- Low find - 1.2 tcf of gas and 0.18 billion barrels of oil
- 3.- High find - 4.3 tcf of gas and 0.65 billion barrels of oil

Onshore Fishing Facilities and Offshore
Activities Associated with Expansion
of the 200 Mile Limit **

1. Expansion expected with no federal assistance
2. Expansion with limited federal assistance
3. Expansion given unlimited capital

An example of one set of assumptions is:

High Oil and Gas Find:

- 0.65 million barrels of oil/
- 50% of service base needs in Davisville
- 25% each in New Bedford and Boston
- 2 gas pipelines to Buzzards Bay/
Narragansett Bay' oil tankered to
New Jersey
- 25 production platforms
- pipe coating yard in Boston no platform
fabrication in the region
- 30 service vessels
- 2100 employees

Expansion of Fisheries with Limited Federal Assistance

- 85% increase in crews
- 45% increase for number of fishing vessels
- 130% increase in landings processed in
New England
- 100% increase in processing labor
- 150% increase in domestic landings for the
New England fisheries

Another dimension which must be super imposed over the 9 scenarios is time. The dimension can be added through the use of such tools as platform installation and employment curves. The reason is that the oil and gas activities fluctuate, depending on the progress of exploration, development, and production, and the fishing industry can be expected to expand gradually. The interactions between the two will change over time, and as a result, so will the impacts. This type of analysis would show, for example, whether the peak years of service base activity would coincide with rapid expansion of the fishing fleet, putting great strain on New England ports or whether fisheries expansion might occur as oil activity is declining, lessening onshore impacts.

Examples of impacts which would emerge from this scenarios are:

- impacts of oil spills on spawning areas, reduction in future age classes, and losses to commercial fish landings.

- reduction in catch resulting from space removed from fishing operations by pipelines and offshore structures.

- damages to gear resulting from pipelines, subsurface obstacles, and oil related debris.

- impacts on shoreside space available for fish processing and service base activity.

- competition in the labor force.

The scenarios would be incomplete without overlaying Lease Stipulations and Operating Orders in order to measure the effectiveness of them in mitigating net adverse impacts. Take, for example, the case of pipelines. The process described above produces a "worst case" in terms of the amount of space removed from trawling because of pipelines. If all or just a portion of the pipelines were buried, the acreage figure, and hence the landings figure would change considerably. Another example, is the disposal of drill cuttings and drilling muds. Without Lease Stipulation 8 which requires disposal away from important ground fish and benthic areas, a certain percentage of the catch for those species would be lost. With the Stipulation, and disposal away from Georges Bank, the catch would remain constant, other factors being equal.

This impact assessment model provides more detailed analysis than that of the draft EIS for three main reasons:

1. it would provide reasonable predictions of the activities required over time for the development of Georges Bank based on various assumptions. Included in the assumptions would be the expansion of the fishing industry due to the 200 Mile Limit. The present EIS gives few hints as to the expected level of activity over the life of the field and fails to consider

2. it would allow for an ecosystems approach to environmental impact assessment, giving total impact on the whole ecosystem from the total activity expected. The present EIS only addresses impacts on individual species from individual activities
3. the economic impacts would be assessed on a local level where they are expected to be greatest and on the fishing industry. The economic implications of environmental impacts would be addressed. The present economic analysis only looks at broad impacts on the state and regional level and fails to consider the changing activity levels over the life of the field.

STATEMENT BY
SECRETARY EVELYN F. MURPHY
DECEMBER 17, 1976

AT THE PRESENT TIME, NO ONE CAN CORRECTLY PREDICT THE POSSIBILITY OF AN OIL SPILL COMING ASHORE OR IF THE SPILL WILL BE OF SIGNIFICANT SIZE.

HOWEVER, I FEEL IT'S NECESSARY TO INFORM THE CITIZENS OF THE COMMONWEALTH OF THE STATE'S CONTINGENCY PLANS IF THE SPILL DOES TURN TOWARDS OUR SHORES. I ALSO WANT TO POINT OUT THE SERIOUS ENVIRONMENTAL CONSEQUENCE TO FISHING AREAS ON GEORGES BANK IF THE SPILL REACHES THOSE AREAS.

THE STATE DIVISION OF WATER POLLUTION CONTROL HAS COASTAL SERVICES, INC., AN OIL SPILL CLEAN-UP FIRM, UNDER CONTRACT AND ON STANDBY ALERT.

WE CURRENTLY HAVE TWO FORTY FOOT BOATS, COMPLETE WITH OIL SPILL CLEAN-UP EQUIPMENT, WAITING AT WOODS HOLE. HOWEVER, COASTAL SERVICES IS CAPABLE OF CLEAN-UP ONLY NEAR THE SHORELINE AND ONSHORE. THEY DO NOT POSSESS OPEN WATER CAPABILITIES.

THE STATE ALSO HAS PERSONNEL AT NANTUCKET AND ARE MAINTAINING AERIAL SURVEILLANCE.

IF WE FEEL THAT THE SPILL THREATENS SHELLFISH, WE ARE ALSO PREPARED TO CLOSE ALL SHELLFISH BEDS.

CONCERNING FISHING AREAS ON GEORGES BANK, AN OIL SPILL COULD --ADVERSELY AFFECT SPAWNING ACTIVITIES OF CODFISH AND ALSO THE EGGS AND LARVAE OF COD, HERRING, AMERICAN DAB AND SAND LAUNCE.

THE AREA THAT WOULD BE IMPACTED IS ALSO A PRIME FISHING AREA FOR FLOUNDERS, COD, HADDOCK, AND SEA SCALLOPS. A SIGNIFICANT OIL SPILL COULD RESULT IN A TREMENDOUS LOSS OF INCOME TO FISHERMEN AS WELL.

SPIILLED OIL WOULD ALSO PRESENT AN ESPECIALLY GRAVE PROBLEM TO SEA BIRDS POPULATIONS SUCH AS EIDERS, PUFFENS, AND RAZORBILLS.

A PREVIOUS SPILL IN THE 1950's CAUSED REDUCTIONS AS MUCH AS 90% IN THE POPULATIONS OF SOME SPECIES.

THE PRESENCE OF TARBALLS ON MASSACHUSETTS BEACHES COULD AFFECT OUR TOURISM INDUSTRY AND ALSO IMPACT SHORE LIFE SUCH AS SOME BIRDS AND SHELLFISH AND COASTAL WETLANDS.

LT. GOVERNOR THOMAS O'NEILL HAS CONTACTED CLEAN GULF ASSOCIATES, A NON-PROFIT CORPORATION ESTABLISHED BY THE MAJOR OIL COMPANIES TO BATTLE SPILLS RESULTING FROM OCS DEVELOPMENT.

THE LT. GOVERNOR HAS REQUESTED STAND-BY ASSISTANCE FROM THEIR EAST COAST SUBSIDIARY, CLEAN ATLANTIC ASSOCIATES.

THE STATE IS ALSO MOST CONCERNED ABOUT THE LEGAL RAMIFICATIONS OF THE SPILL IF IT AFFECTS THE STATE'S MARINE RESOURCES OR ANY PERSONAL OR REAL PROPERTY.

CURRENTLY, ONLY ONE FEDERAL LAW, THE WATER POLLUTION CONTROL ACT, PROVIDES LIABILITY UPON THE SPILLER.

HOWEVER, IT LIMITS LIABILITY TO \$100 PER TON OR \$14 MILLION, WHICHEVER IS LESS. THE LIABILITY ONLY COVERS CLEAN-UP COSTS AND NOT DAMAGES TO PERSONAL OR REAL PROPERTY.

MASSACHUSETTS HAS A STRONGER STATE LAW UNDER THE AUSPICES OF THE STATE WATER POLLUTION CONTROL DIVISION.

OUR STATE LAW PROVIDES LIABILITIES FOR COSTS OF CONTAINING OR REMOVING OIL AND IS LIABLE FOR ALL DAMAGES DONE TO NATURAL AND RECREATIONAL RESOURCES AND THE COSTS INCURRED TO RESTORE THESE AREAS.

THE SPILLER IS LIABLE FOR ANY DAMAGE TO REAL AND PERSONAL PROPERTY.

STATE LAW, HOWEVER, DOES NOT COVER THIRD PARTY DAMAGES SUCH AS A FISHERMAN LOSING HIS GEAR DUE TO AN OIL SPILL. THE FISHERMAN CAN COLLECT FOR LOST GEAR BUT NOT THE WAGES LOST BY HIS INABILITY TO FISH.

BOTH THE LT. GOVERNOR AND I ACTIVELY SUPPORT CONGRESSMAN STUDDS' BILL, WHICH WOULD PROVIDE FEDERAL OIL SPILL LIABILITY THAT INCLUDES PROVISIONS FOR THIRD PARTY DAMAGES INCLUDING THE LOSS OF INCOME.

BOTH TOM O'NEILL AND I SUPPORT THE SILVA-KENDALL-BULGER STATE BILL WHICH ALLOWS THE STATE TO SET HIGHER LIMITS OF LIABILITY AND WOULD BE AVAILABLE IN THE ABSENCE OF SIMILAR FEDERAL LEGISLATION.

FROM THE OFFICE OF GOVERNOR DUKAKIS

STATE HOUSE

BOSTON 02133

FOR RELEASE 9:00 A.M. TUESDAY
DECEMBER 7, 1976CONTACT ALAN RAYMOND
(617) 727-2766, 2780

The following is testimony presented by Governor Michael Dukakis on the Draft Environmental Impact Statement for North Atlantic Lease Sale at the Howard Johnson Hotel, 57 Complex, 200 Stuart Street, Boston.

I appreciate the opportunity to testify on the draft Environmental Impact Statement for the proposed North Atlantic Lease Sale.

First, I want you to know that we support the proposal to explore and develop North Atlantic oil and natural gas resources. We intend to encourage the location of OCS-related industry in New England, and, specifically, in Massachusetts.

At the same time, we are concerned that development -- both offshore and onshore -- proceed in a manner which is environmentally, economically and socially responsible.

To accomplish this goal we over the past 18 months engaged in a detailed study of the OCS process -- its problems and its opportunities. Last spring, I and several members of my administration travelled with representatives of six of our coastal communities to the OCS Technology Conference in Houston.

Lt. Governor Thomas O'Neill, who serves as vice-chairman of the National OCS Advisory Board, is in constant contact with the Department of Interior. He has also established a 200-mile working group in an effort to resolve potential conflicts between the fishing industry and offshore operations.

The results of our efforts to date have been encouraging. On June 2nd, I submitted recommendations to the Department of Interior for tract withdrawals, mitigating measures and lease stipulations. On October 29th, we submitted comments on proposed Operating Orders for the North Atlantic, and requested a meeting with the Department of Interior to discuss them. Just last week, the Lt. Governor announced a \$50,000 pilot project compensation fund for damages to fishing gear due to oil and gas operations -- the first such fund in the nation. And in a few weeks, we will be providing our coastal communities with a detailed technical assistance manual to help them to cope sensibly and responsibly with oil industry siting proposals.

Now we are at the critical point in the decision-making process -- what tracts, if any, should be leased and what restrictions, if any, should be placed upon them.

Fortunately, the Draft Environmental Impact Statement includes several of Massachusetts' recommendations. I am relieved that the Bureau of Land Management's statement agrees that our concerns are justified.

For it should come as no surprise that Massachusetts, more than any other North Atlantic state, would bear the major burden of the hazards of exploration and development in these waters -- specifically damage to commercial fishing and our coastal environment.

In some seasons chances are high that spills or leaks in parts of Georges Bank will reach important spawning areas. Georges Bank is one of the most important fishing areas in the world. The finfish catch is especially significant to Massachusetts, for in recent years it has made up 43% of the North Atlantic Region's average annual catch and 60% of its dollar value. We can never forget that this is a vital renewable resource. The new 200-mile limit ensures the growth of our fishing industry. We must take every possible measure to ensure that nothing threatens that growth.

Our concerns about oil spills reaching land should also be obvious. The closest tracts which are slated for sale are 50 miles from our shores. In some seasons, potential oil spills from these tracts will be heading towards some of the most beautiful and fragile beaches and coastline in the world. Nantucket and Cape Cod depend upon the integrity of that coastline for their economic life. That environmental integrity must be maintained.

We are also concerned with the impact of onshore development. We are beginning to see the effect of the recent mid-Atlantic lease sale in south-eastern New England. As development spreads we have to plan for it and we need information to do that. And because it is becoming increasingly obvious that whatever happens in the Mid-Atlantic is going to affect our economy, too, we must be able to participate in federal decisions on mid-Atlantic operations.

I would like to make six specific recommendations to deal with our concerns:

1) The withdrawal of seven nearshore tracts. The Bureau of Land Management has identified as many as 46 tracts where there is high risk that oil spills may come ashore or damage fish and wildlife resources. Seven of these are of particular concern to us here in Massachusetts. Those seven, constituting less than one hundredth of one percent of the total acreage, should be withdrawn from the lease sale.

2) The withdrawal of two tracts important for lobstering. We endorse your proposal to require special procedures for getting rid of wastes in lobster areas. We strongly urge you to apply them to scalloping beds as well. However, we recommend that two important lobstering tracts with unstable bottom conditions should be withdrawn from the lease sale.

When we decided last June to ask for the removal of these nine tracts we did not have some of the information provided in the current Environmental Impact Statement. We expect in the near future to request that more tracts be withdrawn and we will provide full documentation for our request at that time.

3) The requirement for pipeline burial. Pipelines may get in the way of trawling and dredging and may snarl and foul fishing equipment. I wholeheartedly endorse your recommendation that they be buried. Furthermore, common sense requires that the location of pipelines should be mapped so that vessels can avoid them.

4) The requirement of adequate sounding and lighting devices. The heavy shipping and often violent weather on Georges Bank increases the likelihood of vessels colliding with each other or with platforms.

The Draft EIS suggests that stroboscopic lighting might be required in the North Atlantic, and we would encourage the U.S. Geologic Survey to work with the Coast Guard to identify the best solution. Adequate lighting is a very small price to pay for avoiding accidents which could take lives as well as cause spills.

5) The requirement for practical, well-considered, emergency procedures for cleaning spills and leaks. The high risk of spills leaves us uncertain about the effectiveness of clean-up requirements. We recommend that the Department of Interior, working closely with the states provide careful, detailed review of all the oil companies; plans for dealing with spills. We further recommend that the Department institute stringent requirements to ensure that clean-up operations are immediate and effective.

6) More recent information on the final EIS. As Secretary Murphy will explain, a major criticism of the Draft EIS is that much of the data is out-of-date. If state and community planning efforts are to succeed, more current information and incisive analysis must be included in the final EIS.

We in Massachusetts want a strong, active partnership with the Federal Government in exploring and developing the potential resources on Georges Bank. We need to participate in the decisions you will be making on whether to bring gas and oil ashore by tanker or pipeline. We need to work with you to pinpoint biologically sensitive areas and to develop safety procedures for operating in those locations. We need your help in resolving the potential conflicts between the fishing and oil industries.

In closing I want to address an issue which should be raised. Imposing stringent environmental controls does not mean we will be hampering the oil companies. It means instead more jobs, and an expanding economy. Recent analysis indicates that environmental programs are employing more than four hundred thousand people who would otherwise not be working.

Even if this were not the case, however, we have a responsibility to our heritage that requires us to pass on both our land and sea intact. There are some things that cannot be measured in dollars. The preservation of the delicate structure of our ecosystem is most certainly one of them.

Thank you. We look forward to working with you even more closely in the future.

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